

California Watershed Council: Activities and Accomplishments of Work Groups in 2003-2004

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**California Watershed Council:
Activities and Accomplishments Work Groups
October 14, 2004**

Economics and Funding Work Group

Co-Leads: John Woodling (DWR), Barbara Evoy (SWRCB) and Nettie Drake (MFG, Inc.)

Major Goals

- Ensure a collaborative and cooperative process is in place to facilitate the leveraging of resources among state, federal, and local agencies, watershed groups, and others.
- Ensure that funding addressed identified local, state and federal priorities
- Increase long-term viability through funding opportunities and administration of local watershed partnerships
- Coordinate interagency and intra-agency funding activities to ensure the State can collaboratively and innovatively fund and administer projects on a regional scale.

The Economics and Funding Workgroup met six times. The meetings have focused on: a) information exchange with regard to Resource and CalEPA agency funding programs; b) reviewing both positive and negative aspects of the previous watershed-related grant programs administered by the State agencies, with the purpose of developing recommendations and criteria to be used for future grant funding cycles, and c) administration of Prop 13 contracts to determine protocols for executing contracts for grant proposals approved by SWRCB in 2002.

Products and Accomplishments

1. *Grant and funding process streamlining* – The group invited grant managers from various State agencies to share information about their grant and funding program administration processes. As a result, SWRCB changed its procedures from contracts to grants.
2. *Resolving contract development issues* – The Work Group hosted sessions to discuss concerns relating to contracts. These clarified the process for applicants, provided contacts for assistance, and generally resolved work group participant concerns.
3. *Prevailing wage clarification* – The State Water Resources Control Board and Department of Water Resources provided information as to the conditions under which volunteer labor may be used when a project is funded utilizing a State grant. This was then used by the watershed group community to work with legislators to maintain the use of volunteer labor.
4. *Proposition 50 criteria development* – The group developed suggestions for definitions criteria and priorities to be used in the solicitation of Chapter 8, Proposition 50 funding and invited the Integrated Planning Work Group to propose criteria and performance measures related to integrated planning as it might apply to the Integrated Regional Water Management grant program.

Next Work Group Steps and Recommendations to CWC:

1. Develop criteria for Proposition 40 Integrated Watershed Management Program and other grant and funding programs - The group will engage watershed stakeholders and developed suggestions for definitions, criteria and priorities to be used in the solicitation of other watershed grant funding programs. These reviews will be coordinated with the schedules for grant RFP development completed by the agencies.

2. Recommend streamlining processes that could be used for grant and funding processes across programs and agencies.
3. Resolve contract development issues as needed - The group will be a forum for communicating information regarding future process issues.
4. Examine new legislation – The group will monitor new legislation that may impact funding and grant opportunities and make recommendations as appropriate.
5. Identify and develop alternatives to public funding of local watershed groups and activities. Help local groups become independent of government money.

Integrated Planning Work Group

Co-leads: Cathy Bleier (Resources Agency), Chris Marxen (Cal/EPA), Michael Wellborn (CA Watershed Network)

Major goals:

- Provide or develop as needed policy and technical guidance for watershed assessments and for watershed planning;
- Define what constitutes a watershed management plan for purposes of public funding and future grant programs;
- Streamline, simplify or coordinate permitting process for restoration actions;
- Develop incentives for public and private sector to develop integrated plans.

The Integrated Planning work group met 5 times. This included a joint meeting with the Economics and Funding work group to discuss mutual concerns, coordinate activities, and provide timely input and products to their efforts.

Products and Accomplishments :

1. *Principles for Integrated Planning in Watersheds*. White paper describing opportunities for integrating watershed, land and water use activities by public and private entities to achieve watershed protection (attached).
2. *Recommendations to Integrated Regional Water Management Program*. Suggested criteria and performance measures based on principles for integrated planning for u
3. Provided input to the California Watershed Assessment Manual, and incorporated parts of it into Integrated Planning White Paper.

Next Work Group Steps and Recommendations to the CWC:

- 1) Develop basic definitions and recommended elements for watershed plans for consideration and possible adoption by CWC.
- 2) Work with Council to provide for technical guidances for watershed assessments by a) serving as CWC lead in reviewing Version 1 of the California Watershed Assessment Manual (CWAM) which focuses on northern CA wildland watersheds, and b) ensuring that resources are available for expanding CWAM to cover urban and southern CA watersheds.
- 3) Recommend that CWC make permit coordination for watershed restoration and stewardship a high priority by a) encouraging SWRCB to develop programmatic water quality certification consistent with CEQA exemption for small restoration projects; b) directing departments to identify current permit coordination activities and meet to discuss options for additional time and cost savings.

- 4) Explore options for the establishment of a clearinghouse for watershed plans and make recommendations, if needed, to CWC.

Education, Outreach, and Capacity Building Work Group

Co-leads: Stefan Lorenzato (DWR), Beth Jines (SWRCB), and Joan Clayburgh (Sierra Nevada Alliance)

Major goals: Build the capacity of local watershed groups throughout California, improve public understanding of watersheds, and expand stakeholder participation in local watershed efforts through improved community outreach.

The EOC Workgroup met five times, initially developing a focus area and then bringing forward various initiatives to further the work group's objectives. The group identified 4 general areas of interest for capacity building, 3 areas of interest for education efforts, and 3 target audiences in which the group could expand its understanding of other important needs:

- Capacity efforts:
 - Publicize model watershed work, regional examples, and demonstration projects
 - Develop Watershed Web Portal content
 - Educate agencies on what it means to build capacity
 - Develop and implement assistance programs such as a For-Sake-of-the-Salmon Circuit Riders program and a California Technical Assistance Network involving Universities and Colleges
- Education efforts:
 - Build and support partnerships and networks that employ watershed education as an element of watershed management,
 - Enhance existing broad information networks by providing information that relates to watershed management.
 - Educate CWC participants and people and organizations that the committee believes are key strategic partners, regarding watershed management and educational opportunities
- Target audiences to broaden understanding:
 - Water district and flood district managers
 - The California Environmental Education Foundation
 - Regulatory programs and the people they regulate.

Products and Accomplishments: White Papers, Draft Proposals, and Participation in California Environmental Education Principles development:

1. *Circuit Rider Proposal.* Developed proposal for individuals to travel within subregions to provide operational or technical assistance to watershed groups and to help establish groups where none exist to engage public in assessing, planning, and managing on a watershed basis. This model is being explored for use by Salmonid Restoration Federation. Attached.
2. *California Technical Assistance Network proposal.* Developed proposal to facilitate the transfer of information from Universities to watershed-scale decision-making and to provide educational and other science assistance to groups and agencies working in watersheds. Attached.

3. A proposal to integrate watershed management perspectives into the Education Principles for the Environment newly required by the Education Code. Attached.
4. A description of possible structures for regional technical assistance networks that looks at proposals currently circulating

Next Work Group Steps and Recommendations to the CWC.

- 1) Explore and discuss how to support implementation of circuit riders and regional technical assistance centers.
- 2) Contribute to the web portal initiated by the Resources Agency, providing links to model efforts, local stewardship groups, educational materials, networking capacity.
- 3) Identify target agencies to educate on what watershed group capacity building is.
- 4) Identify model watershed work, regional examples, and demonstration projects
- 5) Promote grants or dedicated funding for local watershed group capacity building
- 6) Build partnerships at the local level
- 7) Promote local stewardship of watersheds
- 8) Engage young people and general citizens in local watershed efforts
- 9) Help watershed groups become less dependent or independent of government money.
- 10) Contact key people in programs that can help advance an understanding of watershed management.

Recommendation: This work group served as a useful means of coordination and a jumping off point for participants to pursue and implement the steps above. While there is a desire to continue the EOC Workgroup, it could probably best support its objectives by meeting only two times a year.

Data and Information Sharing Workgroup

Co-leads: John Ellison (Resources Agency), Stuart Lott (SWRCB) and Kerri Timmer (Sierra Connections)

The Data and Information Sharing Workgroup has met on five occasions.

Major goals:

- Expand the types of information collected and used;
- Expand the use of all data beyond agencies and universities to the local level for local decision-making;
- Create decision-support tools and an infrastructure for using data at the local level for decision-making purposes;
- Create a mechanism so that watershed data can be used for public outreach and education;
- Assure the quality of watershed-related data;
- Establish links that may be utilized for watershed community capacity building.
- Help ensure that the data that is collected and the information that is generated are needed and useful.

Products and accomplishments:

1. Development of a draft survey for identifying watershed information needs of state, federal and local agencies (see attached)

2. Draft survey for identifying watershed information needs of local community groups (see attached)
3. Assistance to Resources Agency in designing and implementing the new Watershed Portal website.

This work group also coordinated with the Outreach, Education and Local Capacity work group to draft the survey for local groups.

The Data and Information Sharing Workgroup identified the following list of projects that participants considered high priority and imminent. Within this list, projects have been prioritized by time (less than 1 year, 1-2 years, or 3+ years); effort (unilateral, committee, or multiple agency/stakeholder action); benefits (measure of how direct and immediate the benefits are and how many beneficiaries); and costs (no new staff or funds, some new resources, or substantial new funds and staff).

Next Steps and Potential Recommendations to the CWC:

Needs Assessment:

- 1) Conduct a survey and review existing documents (e.g. technology and data-related recommendations from Bulletin 160-03 and the California GIS Association and others) to determine data and information needs of local groups and government agencies relative to watershed decision-making. Use results to form Phase 2 recommendations for CWC consideration. (15 priority points out of possible 15)

Standards:

- 1) Require member organizations to provide mutual support by cross linking their web sites and providing watershed specific search capabilities. Link local data libraries and web sites via the state portal. (15 pts)
- 2) Continue to support the Watershed Funding Database. Require organizations administering grants to enter information on grant funding opportunities in this database. (15 pts)
- 3) Require state grant/project applicants to use State data collection and cataloging standards and to catalog any data they produce either in CERES, the California Digital Library, NBII or a similar web accessible metadata catalog or "library." Withhold final grant contract payment until this step is complete. (14 pts)
- 4) Fund interns to catalog watershed-related environmental data and information. Consider Resource Agency's contract with UC Davis for support of the NRPI database is an example of this. (14 pts)
- 5) Continue to support and enhance CERES so that it can "mine" data from other metadata catalogs. Work with member organizations to consider Resources Agency implementation of information architecture that enables common searches across the various metadata catalogs and watershed "libraries." (14 pts)
- 6) Fund or otherwise support document archiving and access by state and local entities (e.g., training, organizing and infrastructure development for local watershed groups to set up and maintain local web libraries). Use the California Digital Library to house watershed-related documents. (12 pts)
- 7) Require that web accessible "Libraries" containing watershed specific documents and data produced by grantees be spatially referenced to "nest" and form regional collections. Work with organizations to use simple, low cost spatial referencing by tagging or indexing their documents and data with CalWater. (12 pts)

- 8) Have State develop an authoritative, State-sanctioned reference list of approved data collection and cataloging standards and protocols to assist watershed groups and agencies develop interoperable databases and web resources for environmental assessments and other watershed projects. [This is a work in progress. Existing DWR/SWRCB web site, <http://bdat.ca.gov/>, already provides standards and offers resources for environmental sampling.]. (11 pts)

Outreach:

- 1) Maintain and support existing watershed group registry at UC Davis (ICE) to help establish and keep current a comprehensive list of watershed groups in California and establish an e-mail distribution list for future communications. (14 pts)
- 2) Continue to refine, enhance and support the California Watershed Portal in response to community input and review. Bring suggested changes and enhancements back to the CWC Data and Information Sharing Work Group for review and prioritization. (12 pts)
- 3) Seek a change in legislation to allow bond act funds to be used for building and maintaining data and information infrastructure needed for effective watershed projects and accountability. (11 pts)
- 4) Fund a program of outreach and education about data sharing and management for watershed groups, Resource Conservation Districts, etc. that addresses existing data, web sites (portals), document archives, decision support tools, computer models and other resources that are currently available. Use a "train the trainer" approach for outreach and education. Use a regional approach to collect and disseminate information, where possible, and hold regional workshops around the state to accomplish outreach and education goals. Don't expect everyone to come to Sacramento. (10 pts)

Implementation:

- 1) Establish a standing subcommittee comprised of representatives from state, regional and local members to work out the technical details needed to implement these recommendations. (15 pts)

PRINCIPLES FOR INTEGRATED PLANNING IN WATERSHEDS

**Integrated Planning Work Group
California Watershed Council**

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Acknowledgments

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Executive Summary

The Integrated Planning Work Group developed this paper to promote and facilitate long-term watershed protection through improved integration of land use and resource management planning. The objectives of this paper are to describe the context in which planning for watershed protection takes place and the types of integration needed, and to articulate principles for conducting and engaging in integrated planning.

The paper is targeted toward agencies with land or water use authorities affecting watersheds, to conveners of watershed planning processes including agencies and non-agency entities, and to citizens or stakeholder groups wishing to get more involved in planning for their watershed. The paper builds on definitions, principles, and criteria relevant to watershed protection developed by the Legislature, agencies and the watershed community. The Work Group proposes the following broad principles for integrated watershed planning:

1. Recognize and address multiple perspectives, issues, and objectives, including local, regional, federal, tribal, and state concerns of environmental, economic, and social nature.
2. Integrate and coordinate planning, management, monitoring, and community activities across agencies, jurisdictions, and nongovernmental entities.
3. Provide for inclusive and participatory involvement by all agencies and all stakeholders to ensure meaningful input, including disadvantaged or hard to reach communities and stakeholders.
4. Use or provide at least a minimum level of assessment early in the process to provide a scientific foundation for moving forward.
5. Allow for a long-term, phased implementation strategy while managing for shorter term project delivery.
6. Develop a monitoring strategy for projects to provide scientifically valid information about effectiveness and to determine if overall plan is meeting stated objectives.
7. Establish a process for ongoing, scientifically informed decision-making through adaptive planning, management, and monitoring.

Introduction and Background

CALIFORNIA WATERSHED COUNCIL AND THE INTEGRATED PLANNING WORK GROUP

The California Watershed Council (CWC) was convened in response to the Watershed, Clean Beaches, and Water Quality Act (Pavley AB 2534, Statutes of 2002) which stated the State's intent to integrate watershed programs and implement them "by working with diverse interests at the local level." The CWC serves as a forum for agency coordination and stakeholder input to Cal/EPA and Resources Agency secretaries regarding oversight and implementation of watershed programs. Four work groups were established to address: (1) funding and economics; (2) integrated planning; (3) data and information sharing; and (4) outreach, education and capacity building. Work group efforts are intended to complement each other. This paper was prepared by the Integrated Planning work group. The Work Group included representatives from local agencies, watershed groups, state agencies, consulting firms, restoration specialists, environmental groups, Resource Conservation Districts (RCDs), and others.

PURPOSE OF PAPER

The goal of the Integrated Planning Work Group in developing this paper is to promote and facilitate long-term watershed protection through improved integration of land use and resource management planning. It starts with the premise that all land and water use and resource management activities can affect watershed function and values, therefore the improved integration of planning for different types and scales of activities can facilitate watershed protection.

The Work Group's vision is that agencies and programs will adopt policies to facilitate improved interaction among agencies and promote participation in non-agency stakeholder watershed efforts, and that the principles articulated in this paper are incorporated into future grant program criteria.

The objectives of this paper are to describe the context in which planning for watershed protection takes place and the options for integration, and to provide principles for conducting and engaging in integrated planning. The paper emphasizes principles 2 and 3, which focus on integration and working with stakeholder groups, citing examples or works-in-progress where available and providing additional information about integrated watershed planning efforts in the appendix. The paper also identifies additional tools and sources for watershed planning.

The paper is targeted toward agencies with land or water use authorities (e.g. regulatory, management, technical assistance or grant programs) affecting owned or adjacent watersheds; to conveners of watershed planning processes including agencies and non-agency entities, such as

RCDs, cooperative extension specialists, watershed councils, tribal governments or others; and to citizens, landowners, non-profits or other stakeholder groups interested in issues that may affect the watershed and in getting involved in planning for their watersheds.

RECENT LEGISLATION AND AGENCY AND WATERSHED COMMUNITY ACTIVITIES IN CALIFORNIA

Over the past twenty years, the State and watershed community have supported and promoted watershed planning through a number activities and programs. Key accomplishments include the following:

- Establishment of a Coordinated Resources Management Planning (CRMP) [Memorandum of Understanding](#) (MOU) among six agencies in 1980
- Establishment of [CRMP Council](#) in 1990
- Governor's Watershed Management Initiative and interagency Watershed Protection and Restoration Council in 1997 to 1999
- Establishment of the [CALFED Watershed Program](#) in 1998
- The Watershed Management Council worked with the State to sponsor the [California Watershed Forums from 1999 to 2001](#), exploring ways to improve watershed protection in CA and resulting in "[12 Steps to Watershed Recovery in California](#)" (Sommarstrom 2001)
- In 2001, the California Biodiversity Council's Watershed Work Group produced [Best Funding Practices for Watershed Management](#) to improve the effectiveness and administration of financial and technical assistance programs
- Legislation (AB 2117, Wayne) created the Joint Task Force on Watershed Management to examine state/local collaboration in 2001. The resulting report, [Addressing the Need to Protect California's Watersheds: Working with Local Partnerships](#), recommended state policy and program actions to improve the effectiveness of these efforts.
- Development of the [California Agency Watershed Management Strategic Plan](#) (2003)
- Voter initiatives (Propositions 40 and 50) in 2002 that created new funding programs for watershed, water quality and water supply activities
- [MOU](#) between Resources and Cal/EPA to establish the Integrated Watershed Management Program and the California Watershed Council in 2003
- Convening of the [California Watershed Council](#) by Resources Agency and Cal/EPA in 2003 to serve as a stakeholder advisory group on watershed programs
- Non-profit [California Watershed Network](#) developed an [Action Plan](#) for working with the State emphasizing the need for communication, funding and technical support, and creation of a regional structure and local group effectiveness in 2003.

In addition, recent legislation emphasizes coordination and integration of watershed or watershed related programs and projects. The Watershed, Clean Beaches, and Water Quality Act (Pavley, AB 2534, Statutes of 2002) declares the State's intent "to require State agencies to encourage and support the development of coordinated and complementary strategies and solutions for watershed management across land owner ship and agency jurisdictional boundaries." The Water Security, Clean Drinking Water, Coastal and Beach Protection Act of 2002 declares the need for integrated planning at a regional level for the purposes of protecting water supply and water quality and

reducing dependence on imported water. It also recognizes watershed planning as a component of a regional strategy.

BUILDING ON EXISTING DEFINITIONS AND MODELS

This paper builds on definitions, principles, and criteria relevant to watershed management, watershed planning, and integrated planning developed by the Legislature, agencies, and the watershed community.

Watershed Management: The California Agency Watershed Management Strategic Plan (2003) has provided one of many adequate definitions: “The process of evaluating, planning, restoring, and organizing land and other resource use within a watershed to provide desired goods and services while maintaining a sustainable ecosystem. This process provides a chance for agencies and stakeholders to balance diverse goals and uses for environmental resources, and to consider how their cumulative actions may affect long-term sustainability of these resources.” Other compatible definitions can be found on websites and documents identified throughout this paper.

Watershed Planning, according to the Draft California Watershed Assessment Manual, “consists of an overall vision or set of goals for the watershed, a series of steps needed to achieve those goals, and detailed consideration of how to implement those steps” (Shilling et al. 2004). Riley (1998) describes five models of how people and agencies may come together, make decisions, use science, and implement activities. Comprehensive planning is linear, science-driven, data-intensive and often a long and expensive process. Incremental planning is more focused, short-term, and adaptive by nature. Consensus planning relies on negotiated solutions to standing conflicts over controversial problems, while advocacy approaches try to build community support for—or against—a specific action. Action plans are oriented to quick and opportunistic on-the-ground activity. Five types of watershed plans are also described: single issue-focus, comprehensive (very detailed look at everything), multi-objective (containing actions that meet more than one purpose, produce multiple public benefits or use multiple actions to achieve a given goal), integrated (incorporates multiple authorities and planning processes), and coordinated (with other activities or processes). All have strengths and weaknesses. These are discussed further in Principle #2 of this paper.

Statutory Definitions: California has several statutory definitions that may relate to integrated planning for watersheds.

- California Water Code Section 79078 defines a “local watershed management plan” as “a document prepared by a local watershed group that sets forth a strategy to achieve an ecologically stable watershed.” This plan must include geographical watershed boundaries, natural resource condition descriptions, measurable characteristics for water quality improvements and methods for achieving them, responsible entities for implementing the methods, milestones, and a monitoring program. A “local watershed management plan”, as defined above, addresses only water quality concerns, and offers no guidance for other watershed resources and values. This may limit stakeholder support and hinder its success.

- California Water Code Sections 79560–79565 provides for an “integrated regional water management plan” under Proposition 50, Water Security, Clean Drinking Water, Coast, and Beach Protection Act of 2002, to provide drought protection, water improvement, and water security. Such a plan must address major water related objectives and conflicts of watersheds in a region, including water supply, groundwater management, ecosystem restoration, water quality, and possibly other elements.
- Water Code Section 10536 (SB 1672, Statutes of 2002, Machado) defines a “regional plan” as a plan intended to implement or operate water projects or programs or to prepare qualified reports or studies.

Other Definitions: Other terms in use, but not necessarily in code, include “integrated water resources management” and “integrated watershed management.” Cobourn (1999) describes integrated watershed management as holistic (multiple issues or problems and their interrelationships); integrating water quality and quantity; interdisciplinary with respect to ecosystem and human dimensions; aims for long-term sustainability; and requires collaboration across jurisdictions between all levels of government (shared territory). It would also operate at different scales for different issues (e.g. large area for water allocation down to sub-watershed for non-point source pollution); emphasize incremental continuous improvement rather than aspire to a mega-plan; and incorporate human element through education and the generation of a long-term vision or goal for community.

Principles for Watershed Management have also been developed by a number of entities for the purpose of guiding watershed program development and public investments in watershed protection and restoration (see Table below). Themes of coordinated planning and integration run through all these principles.

Joint RCRC /Sierra Nevada Alliance Principles for Watershed Restoration

- Consistent with watershed level assessment, analysis and evaluation
- Preserves existing healthy conditions from known and future threats
- Eliminates continuing causes of degradation.
- Staged generally from top of the watershed and core healthy areas outward.
- Projects are prioritized for ecological and local economic benefits or revitalization.
- Decisions are based on objectives and benchmarks in a strategic plan.
- Give highest priority to projects using natural processes.
- Progress is monitored and evaluated.
- Does not sacrifice one ecosystem for another.
- Consistent with existing applicable environmental laws.

CBC’s “General Watershed Principles”

- Community-based
- Comprehensiveness
- Cooperation and coordination
- Commitment and leadership

- Monitoring and adaptive management
- Integration of interdisciplinary science and local knowledge

CalFed Watershed Program Principles:

- Support activities that:
- Address multiple watershed issues
- Are coordinated with multiple levels
- Provide for ongoing implementation
- Include monitoring protocols
- Increase learning and awareness

Watershed Protection & Restoration Council: Principles for a Watershed Approach

- Comprehensiveness- all the issues, whole drainage (ridgetop to ridgetop and headwaters to basin)
- Commitment and leadership
- Process and communication
- Integration of science and local knowledge
- Adaptive management
- Cooperation and coordination
- Locally based

Seven Principles for Integrated Watershed Planning

In order to support the continuing evolution and improvement of watershed planning, this paper provides a set of principles to both define and guide the conduct of an integrated planning process for watersheds protection. This paper takes the position that well integrated planning expedites and improves implementation over the long term by being more comprehensive up front and by gaining community support. This support and broad participation fosters innovation, leverages funding and human resources, and reduces conflicts associated with implementation.

While there was general agreement that getting the “process” right was critical to long term success, some participants expressed concern that “too much process” decreases momentum and may use up resources at the expense of on-the-ground results. Accordingly, the work group encourages creativity and flexibility in the use of these principles, and provides examples of different approaches to them.

An integrated plan for watershed protection should accomplish the following:

1. Recognize and address multiple perspectives, issues, and objectives, including local, regional, federal, tribal, and state concerns of environmental, economic, and social nature.
2. Integrate and coordinate planning, management, monitoring, and community activities across agencies, jurisdictions, and nongovernmental entities.
3. Provide for inclusive and participatory involvement by all agencies and all stakeholders to ensure meaningful input, including disadvantaged or hard to reach communities and stakeholders.
4. Use or provide at least a minimum level of assessment early in the process to provide a scientific foundation for moving forward.
5. Allow for a long-term, phased implementation strategy while managing for shorter term project delivery.
6. Develop a monitoring strategy for projects to provide scientifically valid information about effectiveness and to determine if overall plan is meeting stated objectives.
7. Establish a process for ongoing, scientifically informed decision-making through adaptive planning, management, and monitoring.

DISCUSSION OF PRINCIPLES

1. Recognize and address multiple issues and objectives, including local, regional, federal, tribal, and state concerns of environmental, economic, and social nature.

Recognizing that healthy watersheds can produce a wide range of public and private values, the Legislature stated its intent in the Watershed, Clean Beaches and Water Quality Act that the state's watershed management goals should “include, but need not be limited to, maintaining and restoring healthy watersheds that support thriving communities, provide clean water, and sustain natural habitats for future generations” (Public Resources Code 30908). It also stated that priority be given to programs and projects that implement programs that have multiple benefits (PRC 30909).

Since watersheds are shaped by complex ecological relationships and diverse social systems that are continually responding to dynamic economic and political forces, watershed planning must first and foremost be an interdisciplinary scientific process. It may require technical expertise in geology, hydrology, biology, ecology, engineering, environmental science, resource management, social science and urban planning.

It must also strive to relate these processes to the human factor. It must clarify and address linkages between land use and water management, upland watershed issues and downstream concerns, public trust values and economic natural resource use, community well-being and healthy watersheds, short term activities and long term stewardship.

Consideration of these issues requires participation not only by different agencies but also by landowners, tribes, businesses, environmental and civic groups, consultants, and technical specialists from the profit and non-profit sectors, disadvantaged communities and the general public. Communication between agencies and community groups about, goals, programs, planning processes and projects must increase. This may require more resources or more efficient ways of sharing information, e.g., listservs, electronic newsletters, collaboration with RCDs, attendance at watershed events sponsored by watershed groups, RCDs or other local entities. Coordination and communication is discussed in greater detail under principle #3.

The following list includes some, but not all, of the activities included in recent state grant programs for CalFed, Urban Streams, Clean Beaches, Nonpoint Source Pollution, Integrated Regional Water Management, Integrated Watershed Management and others that are being used for watershed protection and improvement.

■ Watershed Protection Activities

- | | | |
|----------------------------|-----------------------------|---------------------------|
| ■ Acquisition or easements | ■ Ecosystems restoration | ■ Forest health and fuels |
| ■ Community organization | Education and outreach | reduction |
| ■ Drought protection | ■ Erosion control | ■ Ground water recharge |
| | ■ Flooding or flood control | |

- Hydropower management
- Habitat restoration
- Invasive plant control
- Levee stability
- Meadow restoration
- Monitoring
- Open space or greenbelts
- Permit coordination
- Permitting
- Project Design
- Recycling
- Regional planning
- River recreation
- Salt removal
- Sedimentation control
- Stormwater capture
- Stormwater recharge
- Stream channel restoration
- Stream restoration
- Technical assistance
- Upland restoration
- Vegetation management
- Water banking etc
- Water quality
- Water security
- Water storage
- Water supply and reliability
- Water treatment
- Watershed assessment
- Watershed planning
- Watershed restoration
- Wildfire hazard reduction

The diversity of issues undertaken in watersheds ranging from mostly rural to primarily urban watersheds can be seen in examples of watershed planning efforts listed in Appendix 3.

2. Integrate and coordinate planning, management, and community activities across agencies, jurisdictions, and non-agency entities.

As mentioned above, various planning models have been described for watershed planning (Riley 1998). The following chart summarizes strengths and weaknesses of those models (Shilling et al. 2004).

Concepts or “Schools” of Planning (from Draft California Watershed Assessment Manual)			
<i>Type of Planning</i>	<i>Description</i>	<i>Planning Strengths</i>	<i>Planning Weaknesses</i>
Comprehensive	Systematic, step-by-step setting of goals and objectives for a number of related mgt. needs, evaluation of alternatives, adoption of implementation measures; also called “rational planning”	Can recognize the interrelationships of many issues and disciplines; emphasis on science and data collection; logical process is appealing; used by many federal agencies; needs strong laws to implement	High costs; too broad and not site-specific enough; low implementation rates; often entails a top-down process, so little public support; may create illusion of scientific objectivity; planning is not a rational science but an art
Incremental	Developed and implemented gradually over time through a bargaining process; Focus is on specific problems or issues & short-term results, which over time address the larger problems	Results oriented with focus on what can be done; the public guides and makes the plan; small-scale solutions reduce risks; adopted now as “adaptive management”; little steps help map future steps	Actions may not address some of larger, more difficult issues; plans may proceed without adequate science & knowledge; implementation may or may not be coordinated; continual interaction required with clients for implementation

Consensus	Involves as many stakeholders in an area as possible; all players treated as equals; implementation based on negotiated political agreement	Implementation rates high due to political buy-in; can be successful in resolving difficult issues; helps communities build and learn; good strategy for attracting diversified funding sources	Process can be lengthy and perceived as too “time-consuming”; plan may be a package of diverse benefits to satisfy partners but not focused and integrated; very difficult individuals can derail the process
Advocacy	Citizens organize to advocate a position or action; plan used to strategically show alternative approach to a more traditional one	Can be politically empowering if coalition or consensus is developed; can help with community building across formerly disparate groups; can break political impasse	Technical content of plan may be professional but may not be representative of broader community; may lack integration with other disciplines; polarization may result if consensus not reached from advocacy
Action	Initiated by citizen groups, districts, and agencies to make something visible and positive happen on the ground in order to build public support and interest; a form of incremental planning	Builds public awareness for the difficult Big Picture needs and watershed-wide approaches; confers credibility on planning process; can develop credibility for government programs or expertise; helps develop new community leadership	Small action projects may or may not correctly apply science or restoration methodologies; plans may not develop enough integration, coordination, or expertise; monitoring may be lacking

Based on Riley 1998

The realities of integrating multiple agencies with different mandates, schedules and funding sources and voluntary stakeholder efforts make comprehensive planning unlikely for most intents and purposes. Curtis et al (2002) suggest that watershed planning has indeed become more focused, action oriented and adaptive.

The “appropriate” approach may also depend on the technical capacity of those who initiate the effort, stage of planning, level of funding, amount of trust or homogeneity of group, and other factors. Planning efforts may also evolve from one form to another. Additional models are discussed in Principle #3.

The Draft California Watershed Assessment Manual discusses many types of plans and planning activities in which watershed planning should be considered (Chapter 8, Use of the Watershed Assessment for Decision-Making).

■ Integration of Watershed and Land Use Planning

The need for integration or incorporation of watershed management with land use planning was a major concern of the work group. Counties and cities have the responsibility to ensure that development decisions protect watersheds and their associated values through General, Specific and Local Coastal Plans and associated CEQA reviews. Local Agency Formation Commissions (LAFCOs) are also an integral part of land use planning.

Watershed boundaries are practical geographic units for considering many issues, including water quality, runoff and ground water recharge, fire and flood hazards, soils and land stability, and

vegetation and habitats. Information and recommendations from watershed assessments and watershed plans can be used in the development of goals, policies, incentive programs, and ordinances to help achieve long-term watershed protection. Watershed assessments should also inform implementation of recent legislation requiring that new development be tied to water supply (see next section and also principle #4).

The [California General Plan Guidelines](#) (OPR 2003) identifies specific opportunities to address watershed issues in the Conservation, Open Space, and Safety elements. OPR also suggests that communities take a regional or broad watershed approach to flood management, coordinating planning for land use, and reducing flood losses. This could be incorporated into the general plan, either as an optional element for watersheds or water related issues, or as a section in the land use, open-space, conservation, or safety element, and flood management principles would be included in long-term development policies. Citations related to the inclusion of water and watershed information in required elements are summarized in the Draft California Watershed Assessment Manual, Chapter 8, and a General Plan Guidelines excerpt about potential components of an optional water element (pages 128-135 of the Guidelines) is included in full in the Appendix.

While the awareness of watershed planning has greatly expanded over recent years, the incorporation of watershed planning concepts and principles into General Plans has not been broadly achieved, due to disincentives to update plans such as the requirement for lengthy and expensive reviews by state agencies (e.g. Department of Housing and Community Development, Coastal Commission). A challenge for watershed proponents is to demonstrate the value of watershed planning for looking at long term costs, benefits, and avoided costs to water suppliers, farmers, environmentalists, etc. of watershed restoration or conservation investments. The support of local elected leadership will also likely be critical to moving watershed efforts forward into these processes. The ability to cost-effectively obtain sufficient data to comprehensively address water supply, water quality, wastewater treatment, watershed processes, flood management, and stormwater management is another disincentive.

Some examples of how watershed planning is being incorporated into general plans include the following:

- Mendocino County General Plan (1981) described Watershed Planning in its introduction
- Siskiyou County's Scott Valley Area Plan (1980) used the Scott River Watershed as a planning boundary
- SANDAG uses watershed boundaries to sort census, land use, and other data in San Diego County
- Humboldt Co. General Plan Update will add Drainage and Watersheds to a Combined Conservation-Open Space Element
- Marin County General Plan establishes natural resource goals, policies, and programs on a watershed basis and includes the local RCD and the Natural Resources Conservation Service as integral members for the implementation of the plan

Other local agencies and special districts (e.g., open space, parks, and flood control districts) may also play critical roles in watershed protection and enhancement through other land and water management authorities. The National Association of Counties website is a good source of information and has a number of publications related to local government roles in watershed protection (see Appendix).

■ **Integration with Water Management Planning**

The relationship between watershed planning and water quality is well established. It has been institutionalized by USEPA and the SWRCB in the development of Nonpoint Source Pollution programs, TMDL programs, Watershed Initiatives and Basin Plans. It has resulted in resources and funding to promote watershed assessments and best management practices to reduce erosion, runoff and pollution.

The importance of linking water quality and water supply management is growing. The Integrated Regional Water Management program (IRWMP) was created to encourage the integration of water quality and water supply protection at regional levels to ensure the reliability of water supplies and protect against drought.

The linkage between water supply and watershed planning has been less apparent in the operations of water supply agencies. As demand on water sources outside a watershed increase, however, the potential contribution of watershed planning to conservation, floodplain management and restoration, conjunctive use, recycling and other activities should be obvious.

Watershed groups can complement agency activities to recharge surface and ground water supplies, address flooding issues, protect fisheries and water quality through activities such as stream restoration, riparian protection, and land management improvements on private lands, and by identifying and garnering support for public open space, habitat preservation and other values can be used to implement water management objectives. The [Draft Ahwahnee Principles for Water Supply, Water Quality and Watershed Integrity](#) presented to the Local Government Commission in 2004 support watershed based planning and protection as an integral part of water management.

The State's Integrated Regional Water Management Program recognizes the role that watershed approaches can play in protecting and enhancing water supply and can fund planning and projects that support "regional" water management plans. The challenge will be connecting watershed stakeholder communities with the diverse array of water management agencies and plans or related plans, including ground water, urban water, stormwater runoff, flood control, waste treatment, many of which don't currently coordinate with one another. Hopefully, Proposition 50 will provide adequate incentive to both the agencies and watershed community to work with each other.

Watershed assessments can also be used to inform the implementation of recent legislation requiring the linking of land use and water supply plans by providing spatial information about the relationship between supply, development, and future growth. Senate Bill 610 (Statutes of 2001) required that local water suppliers have a multi-year plan in place that contemplates not only the future growth demands on their systems, but also how that demand will be managed should a drought period of varying length occur. SB 221 carries the process to the next level with a requirement for a water supplier to provide verification of specific waters supplies for any development proposed over 500 dwelling units or with a development agreement. While focused on regional water supplies and large development approvals, the legislation is slowly being utilized in local decision making for new development. The contribution of watershed assessments by local groups to water supply is also described the Draft California Watershed Assessment Manual and in Principle #4 of this paper.

■ **Coordination with Regional Planning Processes**

Regional planning processes may offer valuable opportunities for watershed planning. These may be driven by environmental factors, legal processes, economic or fiscal concerns, major land or water development needs or some combination of all the above.

The [Southern California Wetlands Recovery Project](#) is a regional program that uses a non-regulatory, ecosystem perspective and incorporates watershed protection as part of its long term goal. This five-county collaboration under the umbrella of the Coastal Conservancy is considered by many stakeholders an exceptionally successful process, including state and federal agencies, a Public Advisory Committee with local elected officials and business, environmental and educational interest representatives, a Science Advisory Panel, agency Managers Group and County Task Forces. This produced a Regional Restoration Strategy to identify and prioritize projects, pool funds to implement them, and oversee maintenance and monitoring. As such, it articulates a shared vision that each partner—at the federal, state, and local level—can turn to for guidance in how to manage staff effort, direct resources, and measure progress.

Other examples of ecologically driven regional efforts include fishery recovery plans. Multi-county efforts in California, such as the [FishNet 4C](#) effort on coast, the [Five Counties Salmonid Conservation Program](#) in northern California and the [Tri-County Fish Team](#) on the central/south coast, have formed to improve both land and water use practices under local government auspices to protect and recover salmonids, using instream and upland slope assessments, stream and fish passage restoration, and other activities well that stakeholder groups can participate in or even spearhead. The Watersheds, Clean Beaches and Water Quality Act of 2002 requires that Clean Beaches Program projects for sustained long term water quality, restoration or protection be consistent with and implement if possible recovery plan actions for Coho salmon, steelhead, or other Threatened and Endangered (T&E) aquatic species.

Watershed planning should also be considered when addressing other regional planning and management processes such as Habitat Conservation Plans (HCPs), Federal River Restoration

Programs and Natural Communities Conservation Plans (NCCPs). Examples include the San Diego County, Orange County, and Riverside County multi-species plans, and federal recovery efforts for multiple salmonid species.

■ **Role of Watershed Planning in Smart Growth**

Smart growth embraces many of the principles applicable to integrated watershed planning. It seeks to minimize resource use and impacts with efficient development that protects the integrity of open space and habitats. This approach is consistent with the need to protect watershed functions. It will require integration of water quality, water supply, and land use planning to minimize impacts from denser growth and maximize the health of environmental amenities and habitats for those infilled areas. As such it is an excellent place for addressing watershed planning. USEPA's [Protecting Water Resources with Smart Growth](#) talks about watershed planning as it relates to water quality.

■ **Permit Coordination within and among Agency Programs**

Watershed planning, monitoring, and management should be integrated with regulatory programs if needed to expedite implementation of restoration projects if possible so that they can contribute to long term goals for recovery of water bodies, fisheries, terrestrial habitats, etc. The list of potential permits may be long and may vary from place to place. The [California Association of Resource Conservation Districts](#) offers information on permits that might be needed to implement watershed protection activities.

In addition, watershed planners may wish to consider options for streamlining or coordinating permitting for restoration projects. The Santa Clara WMI, for example, includes a goal to "Simplify compliance with regulatory requirements without compromising environmental protection." One proposed action is to include more detailed watershed analyses in EIRs and to balance cumulative impacts with mitigations across jurisdictions.

One of the best examples of coordination to date has been the one-stop shopping first demonstrated in Elkhorn Slough by Sustainable Conservation, a non-profit entity, working with NRCS and the local RCD. An agreement was brokered with all regulatory agencies that provided one-stop permitting to a landowner for a set of pre-approved, standardized practices. The NRCS, a non-regulatory agency, reviewed implementation on behalf of other agencies. This project resulted in a huge increase in private landowner implementation of these BMPs and an estimated avoidance of over 12,000 tons of sediment into the creek.

Another example is occurring on the Merced River where the East Merced RCD is working with agencies, including DWR, DFG, USFWS, SWRCB, CVRWQCB, NOAA, Army Corp of Engineers, etc. to establish a list of voluntary actions to be covered by a riverwide coordinated permit.

These arrangements require time and resources (people) to set up, but can save agencies significant review time once established while benefiting the resource. This approach is being replicated in Napa, Marin, Santa Cruz, and other places, and RCDs may be well suited to spearhead more of these efforts.

Other options for expediting the permitting process include funding by one agency of on-site staff of another to make sure reviews can occur in a timely fashion (e.g., Orange County funded staff from Army Corps and USFW at Aliso Creek), use of a watershed level EIS/EIR to which subsequent projects can tier, development of regional federal permits (i.e., Army Corps), or even simply through joint scheduling of informal pre-consultations with watershed project applicants. These options and others are described in [Removing Barriers to Restoration](#) by the Resources Agency.

■ **Role of Resource Conservation Districts in Integrated Planning**

Resource Conservation Districts have a unique role in working with both stakeholders and agencies to foster integrated planning. Public Resources Code Section 9001 et seq. establishes Resource Conservation Districts as legal subdivisions of the State to “secure the adoption” of soil and water conservation practices, implement erosion control projects on private or public lands,” and “facilitate coordinated resource management efforts for watershed restoration and enhancement.”

CalFed has provided funding through 2006 for RCDs and other groups to provide watershed coordinators to working with local stakeholders and agencies to achieve watershed protection. They have proven very effective at leveraging other funding sources as high as 20:1 for every CalFed dollar.

■ **Coordination with and among State Programs**

Some work group participants emphasized the continuing need for state agencies to coordinate with one another in the planning, review and administration of grant and other programs. State agencies should identify common regional or watershed mandates or objectives that they can work on together with locals to leverage funds and human resources, to reduce conflicts, confusion and burdens on local entities, and to provide a broader benefit overall. This includes bringing concerns and issues of different agencies together at the local level, as well as elevating local or regional concerns to the Sacramento level.

State programs should promote and support coordination among and with local agencies. DWR has established a watershed program to work with local groups to coordinate agencies at the local level, provide technical assistance, connect with educational programs, and assist with volunteer monitoring efforts and other activities.

The CalFed Watershed Program supports coordination, collaboration, assistance among local agencies and groups, the development of assessment and monitoring protocols, and education and outreach. They have even incorporated the linkage with local agencies into their performance measures, considering how whether their grant program increases the number of County General Plans that significantly address watershed health. As mentioned above, CalFed has also contracted with the Department of Conservation to provide watershed coordinators through RCDs to foster local watershed planning and integration.

Finally, state agencies should coordinate better with each other on data collection and information sharing. Resources Agency established a watershed portal to facilitate access to information and data within agencies to support watershed planning. Through the CWC's Data and Information Sharing Work Group, a draft information needs survey has been developed for watershed groups and local entities, and a second survey identifying information within other agencies that can meet those needs. DWR is also developing regional watershed websites with interactive maps and education guides (prototype at <http://www.sjd.water.ca.gov>)

■ **Coordination with Stakeholder-Driven Groups**

While the sections above emphasize interagency integration, satisfactory collaboration with the full range of local stakeholder groups has yet to materialize in many areas. It is critical that new working relationships among all stakeholders and agencies are forged where needed and existing successful ones continue to meet the needs for providing long-term watershed protection. This issue is discussed in detail in the next section.

3. Provide for inclusive and participatory public involvement by other agencies and all stakeholders to ensure meaningful input.

■ **Importance of Stakeholder Groups**

Recent legislation (AB 2534 and AB 1405, Statutes of 2002) declared the State's intent to support, assist, and collaborate with local partnerships and stakeholders as they go about the important work of protecting our watershed resources. These bills recognize the important role that non-agency stakeholders¹ or stakeholder efforts, such as watershed councils, RCDs, Coordinated Resource Management projects (CRMPs) and other groups can play in watershed planning and implementation in both in rural and urban watersheds.

In rural watersheds, individual landowners may own whole watersheds or drainages and therefore have key roles in implementing good management, doing restoration projects themselves and educating and promoting stewardship with other public and private landowners. Local RCDs and the University of California's Cooperative Extension often work with these landowners but may

¹ For the purpose of this document, "stakeholders" refers to citizens, landowners and managers, businesses, trade, civic and environmental groups, place-based groups, watershed groups or councils, and others with the watershed.

also have a role in educating smaller landowners or ex-urbanites and possibly fostering collaboration between different interest groups.

In urban areas, large agencies may assume more responsibility for restoration projects (on urban rights of way and public open space, for example) or for education and information. Stakeholder groups, however, will be critical in securing voter support for funding and ongoing maintenance, for making linkages to other community needs such as open space, recreation, redevelopment in disadvantaged communities, etc., so that multiple benefits are achieved (e.g., Wildcat Creek project), and for coordinating citizens to actually implement and monitor restoration, water quality monitoring, beach clean-up and other projects (e.g., Friends of [river, stream, etc.] groups).

Sierra / RCRC Principles of Watershed Community Involvement

- Watershed strategic, annual and project planning must be open, public, and involve communities in the watershed.
- Community involvement must include a comprehensive and inclusive community public education component.
- Watershed restoration and stewardship should reflect a strong component of sustainable local economics and/or revitalization of local communities implementing projects.
- Advisory and/or oversight committees must include members residing in the watershed.
- Watershed groups/JPAs administering restoration projects must deposit restoration funds in institutions that actively invest in local communities and economic revitalization within the Council's jurisdiction.
- Watershed groups must adopt restoration strategies, and plans of action, that enhance and create local job and contracting opportunities.
- Watershed policy, restoration and stewardship plans, and projects must be consistent with principles and standards established by this [proposed State Watershed Restoration] act.

Stakeholders and groups taking an interest in, and contributing to, watershed planning and implementation may include the following:

- Local chapters of environmental organizations (e.g. Audubon, Riverkeeper, Coastkeeper, Environment Now, Sierra Club, Baykeeper, NRDC, Friends of..., CA Native Plant Society)
- Environmental education resources (e.g. Adopt-a-Watershed, Project WET, Watershed Education Foundation, Envirothon)
- Region-wide organizations (e.g. estuary groups, open space and trail groups, recreation organizations)
- Universities, colleges, and elementary and secondary schools
- Landowner, land managers, land trusts
- Chambers of Commerce, business and trade organizations, commodity groups (e.g. recreation businesses, creekside shop owners, Cattlemen's Association)
- Community civic organizations (e.g. League of Women Voters, Boy Scouts, Kiwanis)
- Environmental justice organizations
- Water sport and recreation groups (e.g. flyfishing groups, CalTrout, Salmonid Restoration Federation, NADS Alpine Club, California Waterfowl Association)
- Agricultural organizations, Sustainable Agriculture Work Groups, local Farm Bureaus

- Government agencies, state conservancies, RCDs and Resource Conservation & Development districts (RC&Ds)
- Media
- Tribal governments
- Watershed councils and committees, non-governmental conservancies, land trusts, fire safe councils, and
- Private and concerned citizens.

■ **Place-Based Groups and Watershed Councils**

Over the last twenty-five years, more and more place-based stakeholder groups have formed around watershed issues. As a result of increasing population and diversity of local communities, natural resources management must accommodate multiple and sometimes conflicting needs. These evolving local groups are demanding that all types of stakeholders be fully involved in shaping and implementing a watershed plan, and that the methods of engagement used by agencies go far beyond comment periods or occasional, select, as-needed get-togethers.

While many agencies are still unclear on how to deal with these groups, numerous studies have now been done of these groups to consider their objectives, structure, and function, successes and how agencies might interact with them. Some common findings include the value of these groups for fostering communication among diverse stakeholders, for outreach and education about watershed issues, and for building social capital.

Several studies suggest that stakeholder driven groups are limited in their ability to plan comprehensively and to prioritize (Curtis et al 2002, Huntington and Sommarstrom 2000). Thus, agency participation and assistance, as well as funding for organizational support such as coordination, is critical to their success.

One study (Sabatier et al. 2002) found that among groups five years or older, more than half did have fairly comprehensive management plans and almost all had implemented one or more projects. This study also found high satisfaction among agency participants of these groups and that groups thought they were able to deal with serious problems. The Resources Agency and State Water Resources Control Board recommended a number of actions to improve the effectiveness of local efforts in their report, “[Addressing the Need to Protect California’s Watersheds](#)” (also known as “AB 2117 Report”). Other studies are included in the references.

Lists of watershed partnerships or groups can be found in some of the publications mentioned above and online at [UC Davis Information Center for the Environment](#) (ICE), though information is not necessarily current.

■ **Capacity Building and Incentives for Collaboration with Watershed Groups**

One of the reasons that full stakeholder collaboration and participation is so important is because it contributes to capacity building, i.e. “supporting the development of strong and stable local or regional watershed partnerships” ([Riley 2003 Draft White Paper](#)). This is critical both to stakeholder groups who need training and assistance and to agencies that depend on them to implement stewardship activities on private lands and to support public investments in watershed protection.

Capacity building may take many forms: information and communication, training, outreach and education, and hands-on participation in coordination, facilitation, planning, implementation, and monitoring. Many local grass-roots community groups need basic information about agency responsibilities, services, regulatory processes, grant programs, and planning or management activities that affect the watershed. It is important, therefore, for agency personnel to participate in watershed planning efforts, whether convened by agencies or stakeholder groups, to exchange information and consider the relevance of local, regional, or state actions by their agencies.

Agencies or local groups can improve communication, educate the community, and build skills and experience of individuals within the community through the following:

- Newsletters (electronic or paper), field trips, demonstration and pilot projects,
- Public workshops, trainings, forums, and festivals
- Citizen technical or advisory task forces
- Hands-on implementation and monitoring of restoration projects
- Cooperation and collaboration with citizen, student, and other types of monitoring programs
- Work with local schools to train teachers and incorporate watershed material into curricula
- Facilitation and conflict resolution to build social capacity

These activities can create a more informed, proactive, and supportive citizenry. A small investment in these up front by agencies and funders can go a long way to help these groups help themselves, and in doing so, help protect public watershed values.

State or regional networking, electronically or otherwise, can also play an important role in keeping stakeholder groups informed about programs and connected with decision-making in Sacramento. This is important due to their lack of resources or time for travel coupled with the need to make programs responsive to local needs. The non-profit California Watershed Network is striving assist in this arena by providing frequent communications among the local groups about pending issues in Sacramento, and played a lead role in working with legislators to address recent problems with using volunteers. The California Watershed Council also identified regional networking forums as a goal to help local efforts.

As mentioned earlier, local specialists who work with landowners can be critical to capacity building. These include RCD staff, watershed coordinators funded through the Department of

Conservation, UC Cooperative Extension advisors, watershed coordinators from DWR and regional water boards, and others.

■ **State Should Support and Encourage Collaboration**

State programs should encourage collaboration with stakeholder groups if it hopes to achieve long-term resource protection. This means its programs should invest in these capacity building activities, where possible, and minimize conflicting messages or programs.

CalFed's Watershed Program has been considered a leader in this respect. One of its primary objectives is to facilitate and improve coordination, collaboration, and assistance among government agencies, watershed groups and other organizations. It strives to provide funds for these types of activities where bond language and legislation permits.

DWR also has a Watershed Program and an Urban Streams Restoration Program, which provide regional staff to coordinate and support many of these activities. DWR has agreed to work with the California Watershed Council to incorporate criteria into its Integrated Regional Water Management Program to emphasize the need for full collaboration with the public on activities that affect watersheds, including water management.

DFG has a coastal fishery grants program, which has provided grants for local capacity building activities for a number of years.

■ **Emerging Models for Efficient Collaboration and Integrated Planning:**

Many recent watershed planning efforts are striving to be more strategic, action-oriented and adaptive (Born and Genskow 1999). While integration across multiple agencies and stakeholder groups may seem daunting in terms of time and resources required, there are additional emerging models for working with the public to address watershed issues.

Some might be considered incremental models, consensus models (Riley1998) or some combination thereof. For example, [Mattole Restoration Council](#) works with many landowners, stakeholder groups and agencies on activities that serve to restore the watershed, and has brought those together and developed the [Mattole River and Range Partnership Plan](#) to build upon these with the help of the Coastal Conservancy.

The Santa Ana River Watershed Group used a "shared governance" model to provide input to the Santa Ana Water Project Authority on how to deal with dairy waste effects on quality and supply, environmental and wetland enhancements and land use planning ideas that could support environmentally and economically healthy watersheds. The group "recognized and accepted the formal authority of the various agencies and the public (including individuals- individual freedom and property rights)" while providing a process for affected participants to focus on specific issues and concerns in order to find opportunities and common ground initiatives. Rather than trying to

develop a comprehensive plan, it served as a scoping entity for plans to be prepared for more localized nodes throughout the watershed.

In Butte County, the RCD has developed a [Combined Watershed Plan](#), which is intended to create a more regional approach for watershed management by integrating Butte County workplans with the tributary watershed groups' management strategies. The multiple benefits of this proposal as related to CALFED goals will be improved coordination, collaboration among agencies and watershed groups, emphasizing landowner education and outreach. Additionally, identification and implementation of measures and focused programs, monitoring and assessment programs and improved irrigation efficiency will serve multiple stakeholders throughout the CALFED Solution Area and beyond to the Bay Delta.

To the extent that MOU's can support and foster more efficient collaboration, they should also be considered. In each of these cases, it is important that agencies and stakeholders identify realistic roles and objectives, that they identify resources needed to support these efforts, and that they follow through. Where MOU's will help secure resources, these should be considered. Examples of other processes may be explored using links provided in the appendix.

4. Use or provide at least a minimum level of assessment early in the process to provide a scientific foundation for moving forward.

As the Draft [California Watershed Assessment](#) (CWAM) explains, "Sound watershed assessment information is critical to support integrated, long-term planning for the protection and restoration of watersheds." Watershed assessment must be more than just multi-disciplinary; it needs to rise to interdisciplinary analysis. The sum of a watershed assessment should be more than its parts.

According to CWAM, "There is no one definition or description of what constitutes a 'good' watershed assessment. In part, what constitutes a good watershed assessment depends on the needs and resources of those who are doing the assessment, the purpose of the assessment, and the conditions and impacts within the local watershed to be assessed. A watershed has both a social and a biophysical context. A good watershed assessment, process-wise and content-wise, must address both. A watershed assessment is usually composed of the following:

- A question or set of questions about watershed conditions that provides direction for the assessment
- Collection and integration of relevant information about human and natural processes at the watershed scale
- The identification of gaps in data and knowledge
- Analysis and synthesis of the information regarding the watershed's condition drawn from data collections, often at various geographic and temporal scales
- Explanations or hypotheses about the causal relationships between human and natural processes and watershed conditions

- A description of how the analysis and findings of the assessment can assist with decision making in the watershed, such as watershed management planning and developing projects to address identified problems
- A scientifically valid design for the collection of future monitoring data
- Strategies to evaluate, incorporate, and communicate future data

A good assessment must analyze why the watershed is in its current condition. It should connect past and current activities and watershed processes to current conditions. With an understanding of these potential causes, watershed practitioners and planners can determine how to protect watershed values, identify restoration opportunities, and design monitoring approaches.”

The CWAM outlines the basic concepts and disciplines relevant to watershed function. While resources, site-specific characteristics, etc. will govern how detailed a watershed assessment will be, it should at least articulate the basic role of each of these, their relative importance to conditions and problems at hand, and their potential contribution to problems and solutions.

Components Relevant to Watershed Assessment (Adapted from CWAM 2004)

- Geography
- Hydrology and water supply
- Climate
- Storm runoff and flooding events
- Geology, Soils, and sediment
- Water Quality
- Aquatic Ecosystems
- Terrestrial Landscape and Habitats
- Land Ownership and Use
- Development and infrastructure •
- Water Management and Uses
- Social and Economic Setting•
- Historic watershed conditions and functions
- Wetlands and Riparian Habitats

Watershed assessments should also provide the basis for monitoring and research. They can do this by identifying watershed-wide data, information or knowledge gaps, and prioritizing monitoring activities.

■ Applicability of Assessments to Land and Water Use Planning

Watershed planning efforts that have produced assessments can be very relevant to traditional land use planning. General Plans could use watershed-scale information about vegetation, stream conditions, upland erosion, flooding effects, endangered species and sensitive habitats, recreation and open space interests, and management and restoration activities to shape goals and policies for

GP elements, to inform zoning and ordinances about appropriate management practices, and to prepare CEQA and NEPA documents.

Watershed assessments and plans can also contribute to water management for supply and quality. Washington's watershed manual is designed so that watershed assessments can inform water rights allocations. Information on the components above, along with other parameters often assessed by groups (e.g. streamflow, water quality, etc.) may be used to assess demand, to identify beneficial uses, and to consider potential contributions of private land management improvements and restoration to supply and quality. Linkages to planning for land use, water supply and quality, stormwater runoff, floodplain management and others are discussed in CWAM Chapter 8.

Future phases of CWAM development will provide detailed guidance on collecting and analyzing new watershed information, and will provide guidance tailored to a wider variety of watershed types.

5. Allow for long-term, phased implementation strategy while managing for shorter-term project delivery.

The [Washington Guide to Watershed Planning and Management](#) says, "A watershed plan does not need to offer all the answers. Instead, it can lay out a long-term process towards finding answers and improving solutions...a long-term system of acquiring new information on key issues and trends ...to modify the management program." This statement recognizes that watersheds are complex dynamic systems that will require time, information, and resources to manage.

Long-term horizons provide a more realistic basis for understanding and managing natural dynamic systems, and can accommodate the physical and fiscal challenges of recovery planning. Goals may be set for a region or large watershed but implemented on smaller ones in a nested fashion, accompanied by monitoring and evaluation. Sustainable funding strategies can be explored, identifying additional sources, opportunities for leveraging resources, and long-term strategies for generating funds. A long-term perspective may also make conflict resolution and legal procedures seem less daunting.

Short objectives and product delivery are, however, critical for maintaining political, fiscal, and social momentum. Recent bond acts funding watershed activities emphasize processes to expedite funding awards even in the face of decreasing State staff budgets. Furthermore, watershed planners must develop clear objectives, action plans, and timelines. Project management can and should be applied to "process" activities as well as projects.

The California Association of Resource Conservation Districts advocates planning for watersheds on a 100 year horizon and using yearly and five year project plans. The Draft California Watershed Assessment Manual (CWAM) suggests 2 to 5 year timelines for watershed plans, which also corresponds to the duration of most state watershed program grants or contracts. Watershed planners may also wish to align their horizons with general land use planning cycles (20 years) or water supply planning (20 to 50 year horizons) to increase the chance of integration

with those plans. The Mattole Restoration Council shows how to incorporate both short and long with a 30 year “vision” and a 5 year “implementation.”

6. *Develop a strategy for monitoring projects to provide scientifically valid information about effectiveness of implemented and to determine if overall plan is meeting stated objectives*

Watersheds are dynamic, integrated systems subject to unpredictable natural and human disturbances. Watershed processes (hydrologic, geomorphic, and biological) operate on a long-term time scale, and the effects of our activities—both adverse and positive—may take a long time to manifest themselves. Monitoring may be needed at different scales, for different periods of time and by different people, depending on the variable. Integration of monitoring processes by different agencies can be challenging, but there is increasing interest in looking for overlap and for opportunities to combine or nest efforts.

Monitoring may be needed to fill information gaps from initial assessments about watershed conditions, i.e. several years are needed just to establish a baseline for some variables. Monitoring will also be needed to track watershed processes and to detect changes in conditions. Finally, monitoring is often desired to evaluate the effects of specific projects or activities.

Monitoring for certain water quality, fish habitat, and even hydrology parameters can be done by citizens with some training. Other monitoring efforts may require agency participation. Monitoring at the watershed scale for some variables remains a challenge for agencies and even academics. Again, this provides opportunities for working with different entities.

Monitoring for project effectiveness, whether instream or upland activities, may take an additional level of expertise. DFG has developed preliminary protocols for monitoring the effectiveness of projects typically funded through their Fishery Grants Program. This type of monitoring is obviously critical to adaptive management.

The need to monitor changes in individual and community well-being and economic viability are often overlooked, although it is possible to track performance measures relevant to increased capacity. CalFed provides examples, such as number of people training, public awareness, role of partnerships in projects, integration of activities into General Plans, etc.

Monitoring is discussed in Chapter 8 of CWAM. There are also many sources of watershed monitoring guidance, particularly for water quality, listed in the Appendix.

7. *Provide for adaptive planning and management.*

We are still learning how watersheds work, how they respond to our action and how cumulative effects occur. Pressures on watersheds may increase or change even before the results of prevention, restoration, or monitoring activities can be realized. Short-term remedial steps may be needed, particularly if public safety or property is threatened.

Since land and water management decisions will continue to occur during this time, our approach to watershed management must be adaptive. CalFed defines adaptive management as the process of refining or redefining management actions and assumptions as a process unfolds and results are obtained. The [Santa Clara Basin Watershed Action Plan](#) takes this further, describing a “process of implementing policy decisions as scientifically driven management experiments that test predictions and assumptions in management plans, using the resulting information to improve the plans.”

Anderson et al. (2003) distinguish between passive and active adaptive management. Passive makes decisions and takes action up front using the best information and then specifies future decision points for evaluating new information and feedback to design subsequent actions. Active adaptive mgmt formally experiments with management options to test hypotheses. Both these approaches require monitoring and multiple decision points. The SCBWMI notes that this requires that “stakeholders make long-term commitments to a process of planning, doing, checking, and adapting their plans...”

The typical situation might ideally borrow from both: to decide to take certain actions, then articulate conceptual models or working hypotheses of how those activities will affect the watershed, develop measures of success for activities in your plan, identify and monitor appropriate variables, and establish a participatory process to review and analyze feedback and make changes to implementation actions.

Short-term or interim strategies may be developed, with the recognition that your program or plan will permit modification of strategies over time. You should clarify where short term “fixes” or decision points will need to be replaced with long-term solutions.

Commitments must be made not only to analyzing but also to learning by watershed stakeholders. These steps again emphasize the level of integration that is needed with agencies, citizens, scientists and researchers, and teachers or trainers.

Complexity of the watershed planning challenge may ultimately determine the type and extent of adaptive management that is possible (Anderson et al. 2003). Nonetheless, all approaches to conducting and improving long-term watershed management and planning should recognize that it is both a social and ecological long term undertaking.

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Presented at the Building Livable Communities, Show me the water!

Appendix 1 Integrated Planning Workgroup Participants

The Integrated Planning Workgroup first met as a breakout session of the California Watershed Council on August 28, 2003. Subsequent meetings of the Workgroup were held on November 12, 2003, December 3, 2003, January 21, 2004 (which included a joint session with the Funding and Economics Workgroup), February 26, 2004, and June 3, 2004. The following persons attended or participated in workgroup meetings:

- Chris Adams, CA Office of Emergency Services
- Patricia Bratcher, US Fish and Wildlife Service
- Cathy Bleier, CA Resources Agency
- Karen Brown, Dept. of Water Resources
- Syd Brown, CA Department of Parks and Recreation
- Monica Reid Burke, Monica Burke Consulting
- Ken Coulter, CA Department of Water Resources
- Kristin Cooper-Carter, CSU Chico
- Caitlin Cornwall, Sonoma Ecology Center
- Bob Gore, CH2MHill
- Jessica Hamilton, The Ocean Conservancy
- Russ Henly, California Department of Forestry and Fire Protection
- Dale Hopkins, SF Bay Regional Water Quality Control Board
- Mark Horne, EIP Associates
- Josh Israel, Salmonid Restoration Foundation
- Beth Jines, CalEPA
- Mary Lee Knecht, Jones & Stokes
- Jane Lavelle, San Francisco Public Utilities Commission
- Stefan Lorenzato, CA Department of Water Resources
- Jennifer Martin, Nature Conservancy
- Chris Marxen, CalEPA
- Julia McIver, CA Coastal Conservancy
- Carl Morrison, Zone 7 Water Agency
- Bob Neale, formerly with Sustainable Conservation
- Sara Newkirk, Ocean Conservancy
- Bill Owens, CSU Sacramento, Center for Collaborative Policy
- Ann Riley, SF Regional Water Quality Control Board
- Clive Sanders, Carmel River Watershed Conservancy
- Patrick Sanger, City of Sacramento Stormwater Management Program
- Monty Schmitt, Natural Resources Defense Council
- Fraser Shilling, UC Davis
- Bill Short, CA Department of Conservation
- Sari Sommarstrom, Sommarstrom and Associates
- Kathleen Van Velsor, Association of Bay Area Governments
- Ben Wallace, CA Association of Resource Conservation Districts
- Al Wanger, CA Coastal Conservancy
- Barbara Washburn, Cal/EPA Office of Environmental Health Hazard Assessments

- Michael Wellborn, Orange County Watershed & Coastal Resources/California Watershed Network
- Dan Wermiel, CA Bay-Delta Authority
- Sunny Williams, Sacramento County Planning Department
- Betty Yee, Central Valley Regional Water Quality Board
- Paula Yoon, Redwood Regional Watershed Center

Appendix 2 Web-based Resources for Watershed Groups, Projects, and Processes

Watershed Groups

- [For Sake of the Salmon](#)
- USEPA Adopt Your Watershed
- US EPA Watershed Projects: Information on Watershed Groups and Projects
- [UC Davis Watershed Partnerships Groups Study](#)
- [UD Davis Natural Resources Inventory](#)
- [UC Davis Watershed Groups in California](#)

Watershed Program, Assessment, Management, Monitoring and Planning Resources

- [Coastal Conservancy's Watershed Planning Guide](#) provides a practical guide for watershed planning for their projects which address some standard processes (e.g. meetings, advisory committees, assessment and analysis, and plan preparation), and also discusses common “stumbling blocks” in watershed planning processes
- [California Association of Resource Conservation Districts](#)
- [California Bay-Delta \(CalFed\) Watershed Program](#)
 - › [Guide to Regulatory Compliance for Implementing CalFed Actions](#)
- [California Department of Conservation](#)
- California Department of Forestry and Fire Protection
 - › [Fire Plan](#)
 - › [Watersheds](#)
- [California Dept of Fish and Game](#)
- California Department of Water Resources
 - › [DWR Watershed Program, San Joaquin Valley & Central Coast](#)
 - › [DWR Watershed Program, Northern California](#)
- [California Partners in Flight](#)
- [Monterey Bay Sanctuary Citizen Watershed Monitoring Network](#)
- [National Association of Counties](#)
 - › Leadership in Watershed Management: The County Role (1999) NACo's Watershed Management Advisory Committee. 86 p.
 - › Restoring Community Wetlands and Watersheds (1999).
 - › Protecting Wetlands, Managing Watersheds & Local Government Case Studies (1999)
 - › Watershed Management and Sustainable Development in Coastal Counties (1996)
- [North Coast Watershed Assessment Program](#)
- [Oregon Department of Environmental Quality website](#)
- [Point Reyes Bird Observatory guide to adaptive conservation planning](#)
- [River Network](#) provides useful technical and organizational tools for groups, agencies and others.
 - › [River Network Listening to Watersheds](#)

- › [River Network Plan for Watershed Wide Volunteer Monitoring](#)
- [Sacramento River Portal and Library](#)
- [SWRCB Clean Water Team Citizen Monitoring Program](#)
- [SWRCB's Watershed Management Initiative](#)
- [U.C. Cooperative Extension—Developing NPS evaluation system](#)
- US Environmental Protection Agency
 - › [USEPA Watershed Information Network](#): Roadmap to information services for protecting and restoring water resources
 - › [USEPA Watershed Academy](#)
 - › [USEPA Surf Your Watershed](#)
 - › [US EPA Water Quality Monitoring](#)
 - › [USEPA Watershed Academy Introduction to Watershed Planning](#)
 - › [EPA Watershed Analysis and Management Process Overview](#)
- [USDA Natural Resources Conservation Service National Watershed Manual](#)
- [US Fish and Wildlife Program: Anadromous Fish Restoration Program \(Central Valley\)](#)
- [US Fish and Wildlife Service: Partners for Fish and Wildlife Program](#)
- [Washington State Guide to Watershed Planning and Management](#) provides guidance for local government agencies, tribes and watershed groups to develop watershed scale plans to address water quantity, water quality, habitat and instream flows. [Addendum No. 1](#) provides additional information.
- [Watershed Management Council Watershed Monitoring](#)

Many watershed group, RCD, and local conservancy websites also contain examples of assessments, projects, and plans (including those listed in Appendix 3).

Appendix 3 Local Groups, Watershed Plans, or Planning Processes

[Big Chico Creek Existing Conditions Report and Stakeholders](#) Inventory have been prepared for the Big Chico Creek Watershed Alliance. The Alliance is comprised of private and public landowners, state and federal resource managers, city and county government representatives, conservation groups, educational institutions, and other interested parties. This chapter explains the purpose of the Existing Conditions Report and Stakeholders Inventory, provides background information regarding the grant that funded these documents, presents a brief history of the Alliance, and discusses results.

[Butte Creek Watershed Conservancy](#) Watershed Advisory Committee (WAC), and Technical Advisory Committee (TAC) focus their efforts on the approximately 510,000-acre Butte Creek watershed (headwaters to its historical confluence with the Sacramento River at Colusa) in response to growing stakeholder concerns regarding issues that include, but are not limited to endangered species protection, water supply demands, land use practices, recreational impacts, fire and flood hazard, and urban development. The Conservancy was formed in September 1995 to encourage the preservation and management of the Butte Creek watershed through watershed-wide cooperation between landowners, water users, recreational users, conservation groups, and local, state and federal agencies. The mission statement of the Conservancy reflects that dedication: "The Butte Creek Watershed Conservancy was established to protect, restore, and enhance the cultural, economic, and ecological heritage of the Butte Creek watershed through cooperative landowner action. After receiving non-profit 501(c) 3 status in 1996, the Conservancy prepared a Memorandum of Understanding (MOU) to create a [Butte Creek Watershed Management Strategy](#). The MOU established a voluntary and cooperative agreement among 24 signatories to work together in a watershed planning process. It is the Conservancy's belief that stakeholders working cooperatively have the greatest potential for streamlining resource management and minimizing conflict between landowners, water users, government agencies, and conservation groups.

[Central Sierra Watershed Committee](#) formed in 1997 to address local concerns primarily related to water quality and fuels management. Over 40 experts attend the monthly meetings to coordinate agency programs and provide technical assistance for local efforts. It became evident early on that a means was needed for permanent and focused coordination in the region so the CSWS applied for and implemented a grant to form the Yosemite-Sequoia Resource Conservation and Development Area (YSRC&D). The YSRC&D encompasses more than 4 million acres in the foothill and mountain areas of Madera, Mariposa, Fresno and Tulare Counties and is sponsored by five regional resource conservation districts, the North Fork Community Development Council,

the Mariposa County Economic Development Corporation, and the Indian Rancherias of Picayune, Tule River, North Fork, Big Sandy, and Cold Springs. Over one million visitors journey to the South Central Sierra Nevada Mountains to experience the beauty of its watershed, which include such national treasures as Yosemite, Sequoia and Kings Canyon National Parks and the Sequoia National Monument. Watershed conservation and restoration is essential to the cultural and economic well-being of this region.

[Deer Creek Watershed Management Plan](#) is an effort to build cooperative stakeholder partnerships that will contribute to the development and compilation of information related to resource management within the watershed; support the existing forum for developing identified actions to improve anadromous fish habitat and sustain healthy ecosystem functions; support the development of community-based watershed management programs; identify the more problematic, unresolved, management issues; create a repository for information related to Deer Creek; provide support for implementation of actions identified for Deer Creek in the AFRP Revised Draft Restoration Plan; consolidate the information into the framework of a comprehensive Watershed Management Strategy; develop an educational program with Vina Elementary and other stakeholder groups to ensure a sustained commitment in understanding the elements and importance of maintaining watershed health; support ongoing educational opportunities with California State University-Chico and University of California-Davis to teach and promote water quality monitoring, rangeland monitoring, watershed planning and program development.

[Los Angeles City's Integrated Resource Plan](#) managed by the Bureau of Sanitation. This is a multi-year, multi-agency and public stakeholder process to integrate wastewater, stormwater and water supply issues.

[Mattole Restoration Council](#) / River and Range Partnership is a coalition of entities interested in addressing natural resource and economic issues in the watershed by working together. It developed an MOU "to enhance and expedite efforts to address watershed restoration, salmon recovery, land conservation, and sustainable resource management in the Mattole watershed." Rather than start a plan from scratch, they've brought together road and stream assessments, planning, management, restoration, and education efforts under the watershed banner, and are working with Coastal Conservancy or others to fund and implement them.

[Merced River Stakeholders](#). The East Merced RCD and Mariposa County RCD have been working together and with watershed stakeholder groups in the upper and lower reaches of the Merced River since 2001. In 2003, the East Merced RCD submitted a Prop 13 project (to the Consolidated Program—it has been recommended for funding by CBDA and will go before the SWRCB for final approval this month) to work formally with Mariposa RCD and both stakeholder groups to create the Merced River Alliance. The Alliance will unite efforts and create a river-wide umbrella organization to help achieve mutual goals and increase watershed stewardship, protection, and enhancement activities in the watershed. It will promote and advance coordinated

planning, management, projects, and outreach. It will form a riverwide planning group to work with both stakeholder groups and RCDs to assess needs and evaluate priorities, as well as seek funding for joint projects. The Alliance will implement K12 watershed based education in schools in the upper and lower reaches and establish a connection between them, establish a “mentoring” relationship between landowners and others who have been involved in water quality testing and landowners on the lower reach impacted by the Irrigated Lands Conditional Waiver Program, conduct workshops for landowners on complying with the Irrigated Lands Conditional Waiver Program, put on watershed fairs in both reaches, conduct a stakeholder-driven tour of the entire watershed for the media and local, state, and national government and agency leaders and staff. It will also compile and synthesize existing data and gather baseline data on fish, riparian bird, and aquatic macroinvertebrate species composition, distribution, and abundance in both the upper watershed and lower Merced River corridor. The baseline information acquired during the proposed monitoring program will increase understanding of ecosystem interactions in the watershed, help identify factors limiting ecosystem health, assist in the prioritization of management and restoration actions, and enable the effectiveness of implemented actions to be evaluated. The East Merced RCD’s Merced River Alliance Project represents an ambitious coordinated, comprehensive, watershed approach to information development, coordination, and community-based watershed management.

Mill Creek Watershed Management Plan is an outgrowth of the [Mill Creek Watershed Conservancy](#), formed for the preservation and restoration of forest and grassland within the Mill Creek watershed and other tributaries of the Mattole River. MCWC has been working with the BLM to develop a cooperative management plan for the Mill Creek Forest, an old-growth Douglas-fir forest that buffers the lowest reach of habitat for salmonids and other sensitive species in the Mattole watershed. The development of a Cooperative Management Plan with local residents and public agencies will include directives for research, monitoring, restoration, education, and recreation.

[Millerton Area Watershed Coalition](#) (MAWC) provides local, landowners, residents and other stakeholders an opportunity to participate in the USBR/DWR [Upper San Joaquin River Basin Storage Investigation](#). The MAWC was developed with assistance from California Bay-Delta Authority Watershed Subcommittee and DWR, and represents a range of diverse interests including locally elected officials, university professors, landowners associations, environmental organizations, irrigation districts, land trusts, and local business interests. Rather than rely on more traditional avenues for local participation in this area of intense conflict, Federal and State agency staff have proactively encouraged active participation of the MAWC and other local stakeholder groups in all phases of the integrated water storage investigation.

Napa River Community Coalition involved separate but coordinated agricultural watershed mgmt plans, a downtown development plan for business and tourism, river restoration and recreational trails and parks; floodplain acquisition and toxic clean-up (Planning Processes for Watershed Councils). [The Napa River Watershed Owners Manual](#) is a collection of recommendations by the

[Resource Conservation District](#) developed with the advice and participation of community representatives; federal, state, and local government agency representatives; private citizens; and local citizen interest groups, which serves as an integrated watershed management plan. It is “a technical and educational resource for landowners and managers in the watershed who want to help ensure the long term protection of the soil, water, and other natural resources of the watershed” and “intended more as preventive maintenance than as an "after the fact" clean-up or mitigation program”. This plan is meant to provide the basis for citizens to jointly address concerns while protecting and preserving natural and community resources in an economically reasonable manner, and is designed to maintain a sustainable river ecosystem.

[Panoche Silver Creek Coordinated Resource Management and Planning](#) group established a steering committee and a technical advisory committee using MOUs. The steering committee, made up of land owners and managers within the watershed, provides direction of the TAC, implements and maintains recommended practices, and invites experts to quarterly meetings to discuss questions and concerns regarding state and federal regulations and policies governing integrated natural resource management. The TAC, made up of representatives of local, state and federal regulatory and advisory agencies, provides assistance in recommending projects, reviewing plans and reports and obtaining the necessary permits. As part of their role, the TAC provides assistance in meeting environmental documentation and permitting requirements for implementation of best management practices identified in the P/SC CRMP watershed plans.

[The Quincy Library Group](#) which formed in response to gridlocked federal land management, proposed an alternative to the USFS plan that they believed more clearly integrated environmental health, public safety and economic well-being. When their proposal was rejected, they took it to Congress and succeeded in getting legislation to implement its recommendations.

San Gabriel and Lower Los Angeles Rivers Watershed and Open Space Plan: ([Common Ground from the Mountains to the Sea](#)) by the Resources Agency, the San Gabriel and Lower Los Angeles Rivers and Mountains Conservancy, and the Santa Monica Mountains Conservancy to develop a parkway and urban open space plan that can be incorporated into future open space, water resource conservation, habitat and restoration plans. Although it could be considered a top-down process since it was statutorily required, the plan incorporated guiding principles that reflected five years of stakeholder discussions at the Los Angeles and San Gabriel Rivers Watershed Council. Plan development included outreach to state, federal and local communities, most cities in the area, and 60 community groups

[San Jacinto River Watershed Council](#) is a non-profit organization of community groups, tribal, farming, dairy, water agencies, government agencies, businesses, and all interested stakeholders working cooperatively to address problems in the San Jacinto watershed. Our goal is to provide educational, scientific, and technical assistance that will help sustain, restore, and enhance the natural resources of the San Jacinto River basin while promoting long-term social and economic vitality to the region

[Santa Ana Watershed Association](#) is made up of San Jacinto Basin RCD, Riverside/Corona RCD, Inland Empire West RCD, East Valley RCD, Orange County Water District, Army Corp, Fish and Wildlife, Santa Ana Regional Water Quality Control Board and Santa Ana Watershed Project Authority (SAWPA). SAWPA gets the money, Orange County Water District administers the funds and the RCDs do the actual on the ground GPS, mapping, eradication of invasive, monitoring and restoration of habitat areas. The other agencies are advisory only. SAWA hires Field Biologist, which are used by each of the RCDs as needed and used to do the monitoring and counts. We have just completed the eradication of Arundo from the upper Santa Ana River watershed. The total acres of Arundo eradication to this point is 3,171. I do not have the bird counts off the top of my head in the eradication and restoration areas. If they are of any value I will be getting them soon. Contact: Dave Hansberger, East Valley RCD David.Hansberger@ca.nacdn.net

[Santa Clara Basin WMI](#) was developed with 32 agencies; civic, environmental, resource conservation and agricultural groups; professional and trade organizations; business and industrial sectors, and the public.” Its mission is “to protect and enhance the watershed, creating a sustainable future for the community and the environment.” It developed a basin characteristics report in 2000, identified 112 worksheets of potential actions in 2001, and an action plan in 2002. The action plan identifies a comprehensive phased approach and the contributions and roles of agencies, orgs, and individuals. One of its goals is to “balance the objectives of water supply mgmt, habitat protection, flood mgmt, and land use to protect and enhance water quality.” Its strategic objectives include working with:

- Planning Commission to integrate WMI into General and Specific Area Plans
- Public Works to address drainage and flooding, develop model ordinances, etc.
- City and county trail and watershed programs for integrating floodplain, and riparian protection with habitat and recreation
- Urban runoff prevention programs on NPDES implementation
- Public works to develop and implement model policies for infiltration and runoff
- Water districts on integrated water resources planning, conservation and recycling programs
- Discussions about Habitat Conservation Plans or NCCPs
- State and local monitoring agencies on assessment, TMDLs, and discharge permitting programs

Santa Cruz County Integrated Watershed Restoration Program, a collaborative effort by watershed groups, Coastal Conservancy and Santa Cruz County RC, has resulted in assessments and enhancement plans for seven watersheds: Scotts Creek, San Lorenzo River, Arana Gulch, Soquel Creek, Aptos Creek, Watsonville Sloughs, and the lower Pajaro River tributaries (see map). Due to its small size and active partnerships, Santa Cruz County may well have the highest ratio of watershed plans to number of watersheds anywhere in California. Private landowners, nonprofit organizations, technical consultants, and government agencies contributed to the science, goals, and priorities of these plans. Contact person: Karen Christensen, Santa Cruz RCD.831-464-2950 per Nadine Scott, Karen Christensen).

[Shasta River Coordinated Resources Management and Planning](#), initiated by the Shasta Valley RCD in 1991 in recognition of the need for a special sub-committee under the RCD able to focus narrowly on the growing fish and water quality issues within the 800 square mile Shasta Valley. The CRMP's goal is to find ways to successfully mesh land uses within the Shasta Valley with restoration of anadromous fish. The bulk of its efforts are directed towards agricultural operations and land uses, but additional work is dedicated towards the more limited urban streams issues as they affect anadromous fish within the watershed. Efforts since 1991 (costing over \$4 million to date) have included protection of many miles of stream bank with livestock exclusion fences, replanting with native trees and emergent plants, bioengineered bank protection and stabilization, off stream and/or controlled stockwatering methods, reduction and reuse of irrigation runoff water, watershed scale planning, education, outreach, and coordination with and assistance to other watershed groups both within the larger Klamath Basin in Oregon and California, and other watersheds in northern California. Baseline funding has come primarily from the federal Klamath River Basin Fishery Task Force, and more recently from the California Department of Fish and Game. As public awareness has grown through the efforts of the CRMP, the RCD has been able to take an increasingly active role in focusing more of its efforts on the related issues of anadromous fish in general, federally and state listed Coho salmon, Incidental take permitting for agricultural operations, TMDLs and other water quality issues, and instream flows. Currently they are initiating a focus on effectively targeting of \$1–2 million/year in local Federal Farm Bill funding (Klamath EQIP) for the next three years towards meeting those needs.

[Sun Valley Watershed Management Plan](#) was recently completed by the Los Angeles County Department of Public Works. Its mission is to solve local flooding and reduce stormwater pollution while retaining all stormwater runoff within the watershed for conservation, recreation, and habitat. It includes assessment of current conditions, development and evaluation of alternatives, identification of multi-objective projects and cost-benefit analysis of the preferred alternatives. CalFed helped fund plan development and outreach. Multiple agencies and many community stakeholders were involved in the development of the plan through the Sun Valley Watershed Stakeholders Group.

[Upper Merced River Watershed Council](#) is a locally organized, voluntary, non-regulatory group of agencies, organizations, and individuals who are passionate about the area in which they live and work. Millions of people travel to this watershed every year to see its spectacular natural resources, which include Yosemite National Park, Sierra National Forest, and the town of Mariposa; named for the butterflies that migrate to this destination each year. Their objectives include assessing the condition of the Upper Merced River Watershed, building a work plan to implement collaborative enhancement and protection activities, and creating opportunities for education, public outreach, and local community involvement.

Appendix 4 Description of Optional Water Element (California General Plan Guidelines)

■ WATER

Few resources are as intimately tied to the orderly growth and development and economic and environmental well being of California as water, and few present so many planning challenges. California's 34 million residents, 9 million acres of irrigated agricultural land, and abundant environmental needs require over 80 million acre-feet of water in a normal year (in a drought, this drops to about 59 million acre-feet). By 2020, when California's population will have grown by an additional 12 million people, the Department of Water Resources (DWR) projects that the state may be short by over 2 million acre-feet of water in a normal year and by over 6 million acre-feet in a drought year.

Water Supply Planning Legislation

In 2001, two water supply planning bills were enacted that require greater coordination and more extensive data to be shared between water suppliers and local land use agencies for large development projects and plans.

Senate Bill 610 (see California Water Code §10631, §10656, §10910, §10912, §10915, §10657) requires a water supply assessment for any development project or related land use plan of more than 500 housing units, 500,000 square feet of retail use, 250,000 square feet of office use, 500 hotel rooms, 40 acres, or 650,000 square feet of business park use or a mixed-use project with any combination equal to the scale noted above. The water supply assessment needs to be part of any CEQA document prepared for the project (EIR or negative declaration). If there is not adequate water to reliably supply the project (and all the other present and future water demands anticipated) in normal, dry, and multiple dry years, new water sources need to be identified. The Urban Water Management Plan may be used, in part, to satisfy the Water Supply Assessment requirement. A strong water element in the general plan that incorporates a coordinated effort between the land use agency and the water supply agency will facilitate implementation of SB 610.

Senate Bill 221 (see Government Code §66410, et seq.) prohibits any land use agency from approving a subdivision map of more than 500 housing units (or a proposed subdivisions of less than 500 units if the project represents 10 percent or more of all connections of a smaller water purveyor—one with fewer than 5,000 connections) unless there is written verification from a water provider that a sufficient and reliable water supply is available. Sufficient water supply is defined as adequate water to supply the new growth in normal, dry, and multiple dry years, taking account of existing and planned water demands on the system. The statute also sets a rigorous standard for considering new water sources. The water source must include water entitlements, capital financing, and all regulatory permits. If a water provider does not respond to requests by the land use agency for water supply data, or the water provider indicates that sufficient water is not available, the land use agency has the ability to seek other water sources to serve the subdivision. However, before the project can be approved, reliable water sources must be secured. Infill housing and exclusively affordable housing are exempt from these requirements. Urban Water Management Plans and related water system master plans are very valuable tools in demonstrating

adequate water supplies. An up-to-date water element could be valuable in demonstrating a comprehensive basis for future water supply.

Since 1976, the state has seen major droughts of two and six years in duration. At the same time, due to the seasonal nature of California's rainfall and runoff, flooding is commonplace during winter storm events. Water quality concerns are expanding to all parts of the state, especially areas that rely on groundwater for their water supply.

Given the importance of water to the state's future, a community would be well served to create a separate water element, in conjunction with the appropriate water supply and resource agencies, in which each aspect of the hydrologic cycle is integrated into a single chapter of the general plan. With recent law that requires land use decisions to be linked to water availability, a water element takes on increased importance.

Water Resources in General Plan Statute and Related Requirements

Water resources are cited in various sections of general plan statute (see §65302, §65302.2, §65303.4, §65352 and §65352.5). However, water-related information, including policies, resource inventories, and supply and demand analysis, are typically fragmented throughout various chapters of the general plan.

Based on several recent state statutes, coordination of water supply and demand information with land use planning is required. Prior to action by a legislative body to adopt or substantially amend a general plan, the planning agency must send a copy of the proposed plan or amendment to any public water system, as defined in Health and Safety Code §4010.1, with 3000 or more service connections and that serves water to customers within the area covered by the proposal. The public water system has at least 45 days to comment on the proposed plan in accordance with §4010.1(b) and to provide the planning agency with the information set forth in §65958.1. Additionally, upon adoption or amendment of the general plan, the same referral must be made (§65357(a)). Furthermore, §65352.5 directs the water supplier to provide a copy of its most recent Urban Water Management Plan and other water supply information to the city or county upon receiving the aforementioned notice.

Issues and Potential Policy Strategies

One way to conceptualize a water element is to consider the entire hydrologic cycle and how community policies and actions affect each component of the system. The following discussion divides the hydrologic cycle into components and highlights a sampling of issues and general policy strategies that might be included in a water management element.

Water Supply and Demand

Based on statutes passed in 2001 (see discussion about Senate Bills 221 and 610 on previous page), land use decisions for major plans and projects now must be linked to a long-term reliable source of water. Additionally, state law requires that Urban Water Management Plans (water

supply/demand plans required of all urban water purveyors of 3000 acre-feet of service or 3000 connections) must be sent to the local land use agency and considered in the general plan.

Typically, water supply issues are addressed as part of the conservation element or in an optional public facilities or services element. A comprehensive assessment would include the following:

- Inventory of existing water demands, supplies, and providers, as well as established programs for water use efficiency (conservation), recycling, transfers, and conjunctive use of surface and groundwater
- Analysis of future water demands based on general plan land use build-out and projected cumulative demands in the region
- Assessment of future opportunities for water use efficiency (conservation), recycling of water, water transfers, conjunctive use of groundwater and surface water, additional storage or water development projects, and other potential increases in water entitlements and supply
- Assessment of any shortfalls in future water demands based on wet, normal, dry, and multiple dry year types and contingency plans for drought conditions
- Inventory of existing ordinances that implement water management issues (e.g., Model Water Recycling Ordinance)

A typical policy response is to ensure the availability and timing of reliable water supplies for existing and future needs under changing hydrologic conditions. This entails realistic assessment of planned facilities and projects, additional water entitlements, and future regulatory requirements. Such analyses must be coordinated with the local water purveyor(s). Much of the data are contained in a purveyor's Urban Water Management Plan or Water Master Plan (or related document).

In particular, water use efficiency (conservation) and water recycling have become major "sources" for communities to stretch their available supplies and enable growth without costly or environmentally damaging water projects. State law requires that local jurisdictions implement landscape water conservation practices and low water use plumbing in new development. Agreements among many of the state's major water providers also require the use of best management practices for water conservation in the urban sector. These policies and actions should be incorporated into general plans.

Many counties that rely heavily on groundwater also have general plan policies (and implementing ordinances) protecting local groundwater supplies from water quality degradation, excessive extraction, or export. Before embarking on water supply policies, it is important to understand the institutions that provide water in the area, the various plans and projects in the works, and the constraints on future water supplies.

The California Urban Water Conservation Council is a voluntary association of the major urban water purveyors in California. They have developed a list of best management practices in water use efficiency for members who have agreed to implement these practices in a consistent manner. Their website is www.cuwcc.org.

Water Quality

General plans address water quality in various ways, usually in the mandatory conservation and open-space elements or in optional public facilities or environmental elements. Typical issues include:

- Groundwater contamination from specific sources, such as underground tanks, known spills, contamination sites, or landfills, or from generalized sources, such as septic systems.
- Sedimentation and related pollutants from land-based activities throughout the watershed, including resource extraction, such as logging or vineyard development, or grading for land development.
- Wastewater treatment and industrial discharges from point sources.
- Urban and rural stormwater runoff and related nonpoint source pollutants.

Policy responses vary from general policies to comply with state and federal water quality requirements to specific requirements related to local grading or erosion control ordinances and runoff standards. Many recent water quality requirements link directly to land use and development practices (see Stormwater section below).

For example, §303(d) of the Clean Water Act requires states to identify “impaired” water bodies (which California has done) and prepare Total Maximum Daily Load (TMDL) studies and plans to reduce pollutant loads in watersheds and clean up impaired streams or lakes. As these studies become more prevalent, land use plans and development policies and standards will need to be refined to improve water quality.

Wastewater Treatment and Disposal

Analysis and policies related to wastewater are usually included in the circulation element or in an optional public facilities element. At a minimum, the general plan should inventory existing and planned wastewater treatment and disposal facilities (and regulatory requirements) and any policies and requirements for on-site septic or related disposal systems. Best practices suggest that projections for wastewater demands should be based on the general plan land use build-out assumptions and closely linked to water supply demand assumptions.

In addition, where appropriate, opportunities to utilize treated wastewater (recycled or reclaimed water) for landscape, recreational, industrial, or agricultural uses (so-called non-potable reuse) should be analyzed wherever feasible. Urban Water Management Plans are required to address opportunities for using recycled water.

Watershed Features and Processes

General plans typically identify and map important hydrologic features, such as wetlands, estuaries, streams, designated wild and scenic rivers, lakes, vernal pools, riparian zones, floodplains, and groundwater recharge areas. There are many reasons to protect such water resources, including aquatic biological value; maintaining “free” watershed functions, such as

aquifer recharge and runoff filtering; and open space for aesthetic and recreational value. Policies to protect water features are often articulated in the conservation or open-space element.

There are hundreds of options for policies related to maintaining healthy and functional watersheds, ranging from land use designations (or minimum parcel sizes) that protect floodplains, recharge areas, riparian corridors, wetlands, and other ecologically significant lands to erosion control policies and standards to maintain water quality. Setbacks from riparian corridors, lakes, ponds, and wetlands are typical, as are low-intensity land uses in groundwater recharge zones or water supply watersheds. Watershed-based policies also provide an opportunity to integrate state and federal requirements for protection of wetlands and endangered species habitat.

Flood Management

The safety element must identify flood hazard areas and establish policies to avoid unreasonable flooding risks. A comprehensive approach should include careful mapping of floodplains and high-risk areas, establishing policies to keep intensive uses out of these areas and mitigation measures or design requirements to reduce flood risk where improvements are at risk. Additionally, local or regional flood management plans and facilities should be incorporated. A watershed-based approach would employ both structural and non-structural solutions to maintain the floodplain functions of sedimentation, deposition, water filtering, and floodwater absorption. An optional floodplain management element was discussed earlier in this chapter.

Stormwater Management

With the expansion of non-point source water quality regulations (under various sections of the Clean Water Act and the Porter Cologne Water Quality Control Act), communities throughout the state are being faced with strict requirements on urban stormwater runoff (and some rural runoff). As a result, general plans have begun to suggest (or require) runoff performance standards that result in an array of site planning and design techniques to reduce storm flows, capture runoff water, and allow it to percolate or filter/settle before being discharged to channels, streams, or lakes. Urban residential and commercial projects and even rural developments are being designed with multi-use stormwater basins, catchment basins and swales, parking lot capture systems, buffer strips to capture and filter water, and similar features to reduce peak storm flows and provide water quality benefit.

These types of facilities and site design features can also restore local aquatic habitat, maintain or enhance groundwater recharge, reduce local flooding peaks, and provide visual and recreational benefit to the community.

Interagency Coordination and Collaboration

Communities are often served by multiple districts, agencies, or companies for the different aspects of water management. State law requires coordination between water purveyors and land use planning agencies. State and federal regulators, such as the Department of Fish and Game, the

U.S. Fish and Wildlife Service, the National Marine Fisheries Service, the U.S. Army Corps of Engineers, the State Water Resources Control Board, and the Regional Water Quality Control Boards, are significantly involved in water resource protection and enhancement. As a result, a water management element is a useful place to incorporate policies and procedures for coordinating all of the entities involved in water resources management.

Why a Water Element is Useful

There are a number of reasons why an integrated water element might be of benefit to a community. By having all water-related policies and actions in one place, the complex issues surrounding water resources are more accessible and understandable to the general public. Few people interact with water districts or the plans and documents they produce, but many lay people interact with a community's general plan.

By directly linking each aspect of the hydrologic system, the projections and forecasts used by the city, county, or special district can be more consistent. For example, future water supply demands, wastewater demands, and drainage needs could all rely on the same land use map and future growth and build-out assumptions. This will help with consistency between general plan elements and lead to more coordinated infrastructure and capital decisions. Each planning agency, whether a water, wastewater, or land-use agency, should consider relying on the general plan land use map and projections for all water-related infrastructure plans and policies. In addition, water suppliers must grant priority to housing projects that would help in the attainment of housing element goals for low income housing when allocating available and future water resources (§65589.7).

An integrated water element can also lead to reduced costs and increased efficiencies for needed infrastructure. For example, placement and location of wastewater treatment and conveyance facilities may be better linked to potential land uses, such as industrial facilities or golf courses, that might take advantage of recycled water. Watershed protection policies might be better linked to groundwater recharge needs or stream and riparian protection policies. Once a watershed has been modified for urbanization or intensive agriculture (or similar use), it can be prohibitively expensive and potentially impossible to restore the water supply, water quality, and environmental protection value back into the ecosystem.

An integrated water management element might also help with other regulatory and planning functions, such as water quality discharge permits, wetland protection requirements, floodplain management, water supply assessment needs, and the preparation of CEQA documents. Finally, a single water management element might increase the visibility of water and highlight its importance in the future of the community.

Ideas for Data and Analysis

The type and quality of data on water resources will depend on many factors, including the water-related districts and agencies in the area, previous studies, and the level of public attention that has been devoted to water.

Optional Elements in Action

Several jurisdictions have developed or are now preparing water elements or chapters. Imperial County, for example, developed an integrated water element that combines water supply, quality, flood management, wastewater, and stormwater policies and analysis into a single General Plan element. This “one-stop” document has been useful to them, as the County has engaged in complex negotiations over water transfers and supplies with neighboring jurisdictions. Inyo County has a separate water resources chapter that focuses on water quality, groundwater protection, and restoration of water-related habitats. Santa Clara County has an extensive policy base for water supply, water quality and watershed protection as part of its Resource Conservation Element. Nevada County is currently working on a Water Element. Additionally, many jurisdictions have established comprehensive policies for water resource protection or management in different elements in the general plan. Mendocino County, for example, incorporated watershed management policies in its General Plan as early as 1981. Santa Cruz, Marin, and Santa Barbara counties have extensive watershed management, water quality, stream and riparian protection policies.

For comprehensive planning purposes, the following data and analysis should be part of the general plan:

- Inventory of existing natural water-related features, such as wetlands, streams, lakes, bays, estuaries, reservoirs, and vernal pools. Information may be available from local, regional, and state GIS databases, specific studies, such as EIRs or specific plans, or from specialized databases such as the Resources Agency’s Legacy Project or the CERES database. (CO, L, O)
- Delineation of the boundaries of watersheds, aquifer recharge areas, floodplains, and various parameters about groundwater basins (water levels, storage volume, safe or operational yield, etc.). General data on groundwater can be obtained from the Department of Water Resources (Bulletin 118-02 or the State Water Plan) or from individual basin studies. (CO, L, O, S)
- Analysis of existing water sources, treatment and distribution systems, service district boundaries, wastewater treatment and distribution systems, stormwater and drainage facilities, flood management facilities, and service districts. These data are available from each individual district or service provider. Urban Water Management Plans are a good source for water supply, demand, conservation, and related information. This information will be useful in meeting the information requirements of SB 610 and SB 221.
- Capacity of existing and planned water and wastewater infrastructure to accommodate new growth and support expansion and improvement. Typical data sources include the Urban Water Management Plans of local water purveyors, Water or Wastewater Master Plans or Integrated Resources Plans of water agencies, and capital improvements plans. Statewide and regional information is available in the State Water Plan. (CI)
- Reliable water supply and projected demand balance in wet, normal, dry, and multiple dry years; analysis of new sources; drought contingency planning; opportunities for conservation, reuse, transfers, etc.

- Land-use based projections of build-out and water and wastewater demands specific to each land use. Different land uses and intensities have vastly different demands for water supply. There are also vast differences between different regions in the state.
- Analysis of generalized water quality in the watershed, available data on water pollution sources, these issues.
- Examination of existing water quality in the watershed.
 - › Identify existing and potential water pollution sources.
 - › Inventory hazardous materials dumps, ponds, and storage sites (using information plans developed pursuant to Health and Safety Code §25500, et seq.).
 - › Identify proposed, existing, and abandoned landfill sites. (MAP)
 - › Examine the results of groundwater tests conducted in the vicinities of landfills and hazardous materials dumps, ponds, tanks, and storage areas.
 - › Examine regulations regarding the use, storage, and disposal of hazardous materials.
 - › Inventory existing and proposed land uses that could contribute to the pollution of streams and other waters.
 - › Data sources include the Water Quality Control Plan for the region, TMDL studies (if they are complete), watershed plans for the region, and specific data from the Regional Water Quality Control Board or local water purveyor.
- Identification of polluted water sources for which reclamation is feasible.
- Identification of watershed groups, programs, and studies in progress and environmental enhancement programs and projects that are water-related.
- Identification of water conservation programs that are, or will be, implemented by the water supplier or other entity supplying water to the city or county. This may include information contained in the Urban Water Management Plan or in the Water Recycling Ordinance.
- Assessment of the use of water bodies for recreational purposes. (CO, L, O)
- Identification of water bodies and watersheds that must be protected or rehabilitated to promote continued recreational and commercial fishing, including key fish spawning areas. (CO)

Ideas for Development Policies

Water element policies should conform to those found in other elements, such as the land use, circulation, conservation, open-space, and safety elements. Water-related policies can be centralized in a water element to avoid duplication. Such policies must be consistent with the general plan as a whole, including all mandatory and optional elements. The following provides examples of policies that a jurisdiction may wish to include in a water element:

- The development, improvement, timing, and location of community sewer, water, and drainage lines and facilities. (CI, CO, L)
- The protection, use, and development of water bodies and courses (rivers, lakes, streams, harbors, estuaries, and reservoirs). (CO, O)
- Erosion control and sediment reduction policies.
- The siting of large new water users. (L)
 - › Opportunities for recycled water use.
 - › The type and intensity of development in or adjacent to water bodies and courses. (CO, L, O)

- › Setback standards near sensitive water features.
- The protection of watersheds and aquifer recharge areas. (CO, L, O)
 - › Type and intensity of development.
 - › Drainage runoff policies and performance standards, such as the reduction of hardscaped areas.
- Expansion alternatives for new reliable water supplies. (CO)
- Water efficiency and recycling policies.
- The use of native vegetation or drought-tolerant landscaping for public facilities and other large installations.
- The protection of water bodies and watersheds that are important for the management of commercial fisheries. (CO, O)
- Floodplain management policies. (CO, L, O, S)
- Minimum private water supply reserves for emergency fire use. (S)

Challenges

Planners face challenges in preparing a single, standalone water element. Water districts, wastewater districts, or private water purveyors serve multiple cities and counties with other customers and other planning and reporting requirements. Some cities, such as San Jose, and counties, such as Alameda, have multiple water providers from many different sources. Often there is a wholesaler of water (such as Metropolitan Water District of Southern California), one or more retailers, and other districts and jurisdictions for wastewater, storm drainage, and flood management. The data for a comprehensive water element may be difficult to collect and analyze. The plans, time horizons, and projections made by various districts and jurisdictions may not be consistent or easily integrated. It is important that the water element neither contradict nor diminish already agreed upon community goals contained in other elements of the general plan. Still, given the complexity of the topic and the critical role water will play in every community's future, a water element is a valuable way to focus on key issues and policy choices.

Technical Assistance

There are hundreds of applicable references that can assist in water resources planning, just a few of which are listed here. Internet resources include:

- Association of California Water Agencies, www.acwanet.com
- CALFED Bay Delta Program, www.calfed.water.ca.gov
- California Department of Water Resources, www.water.ca.gov
- California Urban Water Conservation Council, www.cuwcc.org
- State Water Resources Control Board, www.swrcb.ca.gov
- Water Education Foundation, www.watereducation.org

Useful books and reports include:

- California Department of Water Resources, State Water Plan Update, Bulletin 160-98, 1998. (Note: An updated version is due out at the end of 2003.)

- Johnson and Loux, Water and Land Use: Planning for the Future of California as if Water Mattered, Solano Press Books, 2003.
- Littleworth and Gardner, California Water, Solano Press Books, 1995 (Note: An updated version is due out in 2003).
- Water Education Foundation, Layperson's Guide to California Water, 2000. (Note: 15 other Layperson's Guides are available on topics such as Environmental Restoration, Flood Management, etc.)

Proposal for California Community Watershed Circuit Rider Program

What is California's Watershed Community?

California's 172,000 miles of rivers and streams and over 1,100 miles of coastline are among the state's most precious natural assets. California's watersheds and coastline have also been the focus of intensifying human habitation and commerce for over 150 years – roads and rail, homes, businesses, power and water supply, industry, shipping, resource development, and intense recreation. Since the 1960's in particular, government regulation and funding have reversed or slowed many of the adverse environmental impacts of this human commerce. Yet, after decades of experience, the realization has dawned that the complexity and cost of successfully restoring California's watersheds requires more.

The restoration and health of California's watersheds is generally dependent on community leadership at the local level, and action by the people and businesses who live streamside. California's communities have risen to this challenge through the Watershed Community movement, with volunteers from all walks of life coming together to champion and watch over their local stretch of river, lake, or estuary. An early California survey identified over 600 local groups involved at some level in watershed approaches to resource and environmental protection issues in their communities. There are probably 200 to 300 groups in the state with the primary mission and focus of watershed restoration, with more forming every year. Watershed group activities include, among many endeavors - stream clean-ups, pollution monitoring, plantings (and removal of invasive plants), advocating and partnering with government and business, community education, and restoring of fisheries, just to name a few.

The attached maps of watershed projects (Exhibit A) and watershed groups (Exhibit B) were developed by the Information Center for the Environment at University of California, Davis. The projects map includes 821 watershed related projects out of over 4,000 planning, assessment and restoration projects logged into the Natural Resources Project Inventory between 1995 and 2004 (http://ice.ucdavis.edu/get_project.php?id=30). The map of "watershed groups" was developed between 1998 and 2001 when many local groups were just emerging. This included many entities that were not "watershed groups" per se, but were at least interested in developing watershed approaches and projects.

These maps, which show similar relative geographic densities of groups and projects, suggest the importance of supportive, educated and participatory local groups to advocate, develop, and implement watershed protection and restoration. Naturally, different types of skills may be needed to tailor support to the type of stakeholder community occurring within a given region. This underscores the value of establishing a

state-wide community watershed circuit rider program suited to the needs of different constituencies and issues. This program is described in detail later in this proposal.

How is California's Watershed Community being challenged?

California voters have continued to show their commitment to river and watershed protection. In the last several years alone, these voters have approved over \$10 billion in initiatives for watershed related projects and programs (Propositions 12, 13, 40 and 50). While much of this money has been directed to local government agencies, increasing amounts are becoming available to non-profit organizations, including incorporated watershed groups (not all such groups are incorporated), as the State recognizes the critical role they play in initiating, implementing and maintaining restoration activities and long-term stewardship. Many projects have occurred on the North Coast to address the loss of endangered and threatened salmon, and have been developed by rural stakeholders and landowners. Southern California projects have focused more on water quality, public health, wetlands and recreation needs, and include the support and participation by urban residents, including disenfranchised, poor or minority stakeholders. Increasing numbers of projects are expected in the central and southern Sierra as a result of the CalFed watershed program, where groups will likely include both rural stakeholders and transplanted urbanites. Groups on the central/south coast have also been asking for help and recognition.

Most of these bond dollars, however, are applied to on “on-the-ground” restoration projects and capital improvements, with very limited funding currently available for building the organizational capacity of local watershed groups. Such crucial “capacity building” needs in the Watershed Community have been recognized in many venues. The California Watershed Management Forums, initiated in 1999, produced a report called *“12 Steps to Watershed Recovery in California”* which included a recommendation for the State to support collaborative watershed groups that are community-based. In 2000, approved legislation required the state to evaluate the success of watershed partnerships and to recommend improvements. The resulting report, *“Addressing the Need to Protect California's Watersheds: Working with Local Partnerships”*, again identified the crucial operational support needs of watershed groups. Additional legislation in 2002 called for the creation of a stakeholder process for watershed groups and others to provide input to watershed program administration and development. This legislation resulted in the creation of the California Watershed Council, co-chaired by the Secretaries of the Resources Agency and CalEPA, and a public member. In 2003, another bill was signed to *“Recognize the effectiveness of local watershed groups in helping the state restore watersheds as a healthy resource.”*

Government agencies are increasingly devoting more attention to watershed groups, as often limited resources allow. Many Federal, State and local government agencies have put in place staffing and programs to coordinate with and assist local watershed communities. Over the last 18 months, however, budget cuts, staff reductions, hiring freezes, and travel moratoria have appreciably reduced the ability of the State and other governments to assist local groups.

While some of California's watershed groups can still afford broadly experienced paid staff, diverse technical expertise, and the up-to-date tools; most manage with limited part-time staff, the expertise coincidentally already in the community, and hand-me-down equipment; and all rely on a corps of community volunteers. There may be funding to restore watersheds, but the tools to effectively manage restorations, and manage the community based organizations leading the way are much less available.

Thus, your typical "part-time" (part-time paid that is in many cases) watershed group staffer works long hours marshalling and supervising volunteers, writing and administering grants (hopefully!), balancing the group's checkbook, shoveling dirt at a restoration site, keeping the watershed perspective in front of local officials, monitoring legislation impacting their program, tabling at local educational events, serving on committees, and keeping the old 386 computer alive and running. There is little time to develop or build skills they didn't already have on the first day of the job, coordinate and learn from other watersheds in the state (much less those just next door), scout out new sources of funding and support, engage in long-term and strategic planning, or envision and launch new partnerships and initiatives.

What more can be done to build Watershed Community capacity?

One or two grant programs, such as CDFG's Proposition 40 supported Fishery Grants Programs and the Proposition 13 Watershed Protection Program, have provided limited capacity building support to watershed groups. Government agencies are used to contracting with scientists, consultants, builders and others for technical and "on-the-ground" services. Those same agencies are typically uncomfortable with funding efforts that fall into the realm of "social science", even as they express frustration at such factors as the lack of quality and clarity of watershed grant proposals and grants management. This indicates the need for increased assistance, training, and support for watershed groups in the "business" of being in the watershed restoration business.

For the Watershed Community, two similar programs already underway in California are providing an important new direction in effectively and efficiently building the movement's organizational capacity. Watershed "circuit riders" programs have been established under the management of separate non-profits (For the Sake of the Salmon and the Sierra Nevada Alliance) along the California coast and in the Sierra. Multi-disciplinary professionals with expertise in the sciences, grant writing, project administration, long-range planning, and general organizational management travel a "circuit" and augment watershed group staff and volunteer skills and resources. Circuit riders provide on-the-spot advice and mentoring, assist groups in matching projects to funding sources (and in producing successful grant applications), help network different groups within and beyond their region to share expertise, facilitate group processes and debates from a neutral perspective, and provide focused technical training, among many other services. In many cases, all these groups need is a few hours of assistance on one or more specific tasks to get them over the hump of developing, implementing or managing watershed activities.

A group of state and regional non-profits, and members of state agencies and boards, have considered these two models and have determined that a state-wide circuit rider program would be a vital and necessary contribution to the continued growth of the watershed approach in California. Such circuit rider services need to be sustained as local community watershed groups continue to gear up for the challenges facing them, and to be expanded to cover most regions of the State. Discussions have been held with staff and members of CalFed, CalEPA, the California Biodiversity Council, the California Department of Fish and Game, the Resources Agency, the Water Resources Control Board, and the California Watershed Council.

What would a state-wide Community Watershed Circuit Rider program look like?

1. **Goals.** The Community Watershed Circuit Rider (CWCR) program will focus on organizational capacity building needs and requests of watershed groups throughout the state, with the provision of helping groups link to specific technical assistance (such as technical training workshops) as a secondary goal. The CWCR program will follow a voluntary customer service driven approach (e.g.: with watershed groups being the “customers”) with circuit riders being authorized to respond to the self-defined needs of such groups in a flexible manner. The program’s circuit riders would be available to start-ups as well as established groups. The circuit rider will have no authority or control over a region’s watershed groups, their assistance would be available where help is needed and requested.

2. **Proposed Services.** The program’s circuit riders would provide the following types of services in their regions. In addition, experience with the current coastal program has demonstrated the usefulness of incorporating cross-region visits between circuit riders.

Fundraising: The majority of watershed groups have struggled with establishing sustainable income sources. The key to the long-term health of these efforts is in building diverse income streams to sustain their core staff and operations and in addition to special projects. Circuit riders would help groups:

- Apply and court private foundation grants
- Learn how to do community event fundraisers
- Establish a individual supporter base through direct mail and phone banking
- Cultivate major donors
- Develop other non-grant fundraising strategies such as endowments, and
- Learn how to apply for government grants (as government grants will always be a source of funds even if currently inconsistent and project oriented).

Operational Training: Provide training in the skills needed for:

- Volunteer recruitment and retention
- Involving and keeping happy diverse stakeholders
- Strategic planning
- Educational outreach programs such as classroom programs, creek days, and other field events.

- Financial and organizational management
- Use of tools such as GIS and other computer systems
- Working with the media
- Working with resource management agencies and local governments
- Grants and project management and contracting

Technical Assistance Training: Circuit riders will of course not be expected to be experts in all of the myriad technical issues impacting a watershed. However, they can be instrumental in linking local watershed efforts with the technical expertise they need through organizing workshops and providing referrals. Technical assistance provided to watershed groups could include but is not limited to:

- Establishing water quality monitoring programs
- Designing assessment programs (addressing fluvial morphology, bio-assessments, riparian surveys, proper functioning condition.)
- Implementing restoration programs
- Implementing protection programs (land acquisition, water rights acquisition, landowner stewardship agreements)
- Managing lands under the direct stewardship of the watershed group
- Understanding regulatory processes, including permitting for watershed and habitat restoration projects
- Proper restoration techniques and standards (such as for removing fish passage barriers or decommissioning roads)

Watershed Networking: Each region has unique watershed issues. The issues in urbanized Los Angeles are different than the rural Northern Sierra. Providing opportunities to network with others from the same region helps groups learn from each other. Regional networking can help groups identify and overcome common hurdles collectively. In addition, successes of one watershed can be transferred to another and inspire the entire region. The circuit rider will be responsible for helping to organize regional gatherings and networking, and create regional list-servs.

Information: The circuit rider can generate newsletters and electronic updates to help keep watershed groups abreast of relevant issues, opportunities, trainings and events. The plethora of regional and statewide watershed related meetings, field tours, seminars, hearings, and the like are often impossible for a community watershed coordinator to keep up with. The California Watershed Council committees alone are meeting almost four times a month. The regional circuit rider can help to keep their client groups up-to-date on what's coming up; and can distribute information on outcomes for groups that miss a key event.

Consultation: One of the key aspects of circuit rider services is providing unscheduled, individualized consultation on the pressing issues and concerns defined by their client watershed groups. Circuit riders, through phone conversations, email correspondence, and site visits, provide “on-call” assistance on strategy, tactics, and quick referrals.

Expert Referrals/Assistance: The regional circuit rider is expected to be a leading expert on where to find other local, regional and state-wide experts and expertise. For many hard-pressed local watershed group coordinators learning the broad range of statewide and national experts, in addition to those just on the local scene, is a daunting task. The circuit riders can be the conduit to this larger sphere of experts. Each circuit rider will maintain a state and national resource list and develop regional referral lists.

Facilitation: There are times when watershed groups require the assistance of an outside party to help facilitate sensitive watershed issues, conduct strategic planning, and advance other major planning processes. Professional private consultants can be expensive. A circuit rider can fill the need for facilitation services in their region.

3. **Service Regions.** The ideal circuit rider region is an area with a minimum of 10 to 20 watershed groups located within an approximate “all-season” driving time of 3 to 4 hours of each other and the circuit rider’s home base. In addition to geographic and transportation considerations, the proposed circuit rider regions recognize that any given area’s importance to watershed health may not necessarily be defined by the size of its population. Counties with relatively few residents may be home to a disproportionate share of the state’s water supply, native fish populations, relatively undisturbed watershed habitats, and/or active local community groups.

Using these conceptual standards, the approximate boundaries of up to twelve potential circuit rider regions have been identified:

Coastal

- **Upper North Coast** - Del Norte county to coastal Mendocino county (inc. western portions of Trinity county)
- **Lower North Coast** - Interior Mendocino county to Marin county (inc. Lake, Napa, and Solano counties)
- **Upper Central Coast/Bay Area** - San Mateo county to northern Monterey county (inc. East Bay counties)
- **Lower Central Coast** - Southern Monterey county to Ventura county
- **South Coast** - Los Angeles county to San Diego county (inc. highly urbanized western portions of Riverside county).

Central

- **Central Northern California** - Siskiyou, Modoc, and Shasta counties, plus eastern Trinity county and northern Lassen county
- **Sacramento Valley** - Western Tehama county to Sacramento county
- **San Joaquin Valley** - San Joaquin county to Kings county (inc. western portions of Madera, Fresno, Tulare, and Kern counties)
- **“Inland Empire”/Desert** – Eastern Inyo county and San Bernardino county to Imperial county (inc. eastern Riverside county)

Sierra

- **Northern Sierra** - Southern Lassen and eastern Tehama counties to Placer county,
- **Central Sierra** - El Dorado county to Tuolumne and Mono counties
- **Southern Sierra** – Mariposa county to eastern Tulare and western Inyo counties (inc. eastern Fresno and eastern Madera counties)

Areas with less “group density” or with differing local preferences could be combined into a neighboring region, with the neighboring circuit rider authorized to provide service in such areas if asked (such as now happens south of Los Angeles for the existing coastal program). For instance, the interior and eastern desert regions of southern California could be served by circuit riders from the Southern Sierra, South Valley and Inland Empire regions could provide service to these areas upon special request.

4. Program Management. The CWCR program will be “housed” in the non-profit sector, and ideally be operated by an association of several non-profit partners. A governance board consisting of a mix of individuals from the partner non-profits and representatives from the circuit rider service regions would be established. One of the non-profit partners would be designated as fiscal agent and managing partner for the program.

By operating out of the non-profit sector, the CWCR program will stay flexible and neutral; provide for more effective funding opportunities including access to private foundation funding; be more responsive to a broad range of changing watershed issues; and be service and need driven, rather than subject to specific mandates of individual government agencies.

Strong connections to and collaboration with the public sector (as the two model programs successfully do currently) would be maintained. A public agency advisory panel to the program would be one important tool to assure cooperation and to develop long-term support for these types of activities.

The actual circuit riders would be contract professionals located in their region, selected through a competitive process. The circuit rider does not necessarily have to be an individual professional. For instance, the existing coastal program currently contracts with a sole proprietor, a private consulting firm, and a local non-profit “community action agency”.

5. Program Funding and Budget. CWCR program funding would come from a mix of public agency, corporate and private foundation support, augmented by the all-important contribution of resources from the local watershed community.

Based on an extrapolation from the 2004 budget for the current three region coastal program, a 12-region state-wide program would require an annual budget of just under

\$1.1 million. For the 2004 coastal program, each regional coordinator is scheduled to receive \$71,000 and is required to provide 1,664 hours of base services annually. Each regional coordinator receives up to another \$12,000 annually for the delivery of specific training sessions and cross-region consulting services. For the Sake of the Salmon is scheduled to receive \$34,000 under the 2004 budget to cover the personnel costs and expenses associated with overall program management and administration. Management costs are estimated at under \$100,000 for a 12-region program.

Where is the concept of a Community Watershed Circuit Rider program headed?

The Community Watershed Circuit Rider concept has initially been developed cooperatively through discussions with individuals from the California Watershed Council, Resources Agency of California, and Sierra Nevada Alliance, For the Sake of the Salmon, California Watershed Network, and the River Network. The goal of these watershed professionals and organizations is to:

- Gather the support and input of additional groups and agencies for such a state-wide undertaking,
- Develop a more complete CWCR proposal,
- Secure formal endorsements and partners for the CWCR, and
- Assemble the funding necessary to sustain the two existing regional circuit rider programs, and launch a state-wide program in late 2004 or early 2005.

Using "Watersheds" as an Integrating Concept in the Education Principles for the Environment for Elementary and Secondary School Students.

What are the ingredients of healthy, robust communities, ones in which the natural environment is cared for by informed, engaged citizens who are aware of the need for conservation and stewardship? How can we manage to align our daily lives to help communities sustain their natural resources and cultural underpinnings? One key to answering these questions is understanding the structure and function of watersheds. Another key is nurturing a generation of citizens with a sense of stewardship toward the natural environment. These concepts are at the heart of a new law that requires the development of education principles for the environment that would be used by primary and secondary schools throughout California.

The new State law (AB 1548, Chapter 665, 2003) requires the principles to include, at a minimum, the following concepts:

- (1) Environmental sustainability.
- (2) Water.
- (3) Air.
- (4) Energy.
- (5) Forestry.
- (6) Fish and wildlife resources.
- (7) Oceans.
- (8) Toxics and hazardous waste.
- (9) Integrated waste management.
- (10) Integrated pest management.
- (11) Public health and the environment.
- (12) Pollution prevention.
- (13) Resource conservation and recycling.
- (14) Environmental justice.

The science and practice of watershed management serves as a means to integrate these concepts and provides a way to address another statutory requirement: the application of service learning to environmental education. The science begins with the recognition that a watershed is the living ecosystem whose boundary is defined by how water flows over and through the land. It is composed of land, water, living things, physical and biological processes, human activities (including social and economic processes), and the interactions of these elements. A watershed is a complex relationship of nature and human influences upon it. Understanding watersheds requires the application of many science and social science disciplines. Managing watersheds requires applying the practical scientific techniques used in these disciplines.

Thinking about one's surroundings in the context of a watershed provides a picture that students can relate to while honing in on the environment and all of its marvelous interdependent parts. All of the concepts required to be included in the education principles are at work in any watershed, all the time. Using the watershed as the focal

point for teaching provides a natural integration of these concepts. Teachers are able to incorporate their lessons on a common theme, teach more efficiently to standards and use the local environment to tangibly demonstrate abstract concepts. Students more readily grasp the nature of science, why certain approaches to examining the natural environment make sense, and how an understanding of the environment affects their daily lives. Learning becomes an engaging, hands-on activity, relevant to students' lives. The opportunities for implementing service learning approaches are boundless when the local watershed becomes the focus of attention. Students blend intensive cognitive skills with physical skills that leave them with lasting impressions. The result is measured in higher scores on standardized tests, reduced incidents of truancy and vandalism, a greater sense of place and well being, and a deeper concern for their communities. Using watersheds as an integrating concept has also led to reduced energy waste, increased recycling and other efficiencies for schools and their surrounding communities. Schools which organize their educational programs in this manner report demonstratively positive results in student achievement and engagement, while lowering operation costs and preserving resources. The legacy of such efforts is one of building communities with a reverence for nature, a deep understanding of stewardship and a desire to sustain both community well being and ecological integrity of the landscape in which we live.

Studies show that hands-on, watershed-based education can indeed accomplish these vital needs, yet California has many programs currently offering environmental education that are not aware of the advantages of using watersheds as an integrating concept. The requirement to produce a set of environmental education principles offers an opportunity for the Office of Education and the Environment to highlight these advantages. The education community at large and the environmental education community would benefit greatly from such a step. But the real winners will be all Californians. The science of watersheds could become common knowledge that helps frame the way Californians connect to their communities. And through this process, their ability to make informed choices about how to construct and care for our communities would be greatly improved.

The law also requires adopting strategies that promote active pupil participation with onsite conservation efforts. Many watershed stewardship efforts in California have already begun the process of involving students in active conservation and restoration efforts. The California Watershed Council, along with its strategic partners and the collective expertise of its members across the state, can play an important role in advancing the opportunities for student involvement. The California Watershed Council, its partners and members can also assist the Office of Education and the Environment with developing the principles of environmental education by providing broad-based, informed input to the process and building the capacity of groups to implement truly meaningful environmental education. By utilizing watersheds as living classrooms, supporting the potential of teachers to expand their students' understanding of the world in which they live and empowering them to grow into the stewards of the future, we can ensure a healthy future for our watersheds as well.

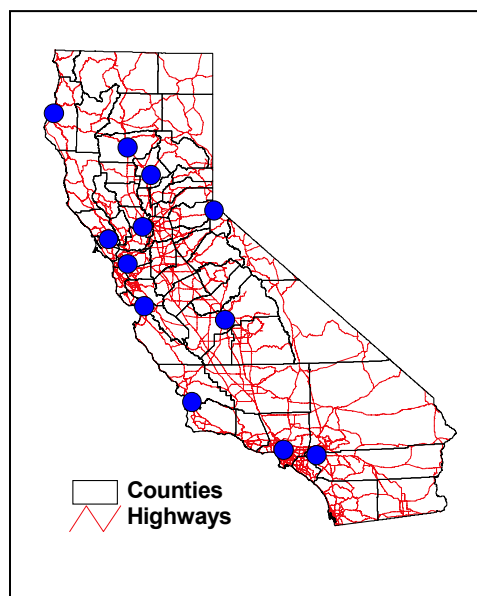
California Technical Assistance Network

California Technical Assistance Network centers (CTAN) are proposed to be regional technical support centers that provide scientific education, research, and technical assistance to watershed stakeholders. The stakeholders include federal, state, and local agencies and local non-profits and watershed groups. The network would work with state agencies and regional non-profit organizations charged with providing education and assistance to watershed groups.

The host organization/university at each CTAN center would be the primary contact. The host organization would agree to provide space, access to facilities, basic administrative support and the skills and expertise of their staff, faculty and or students. Additional partners at the regional centers will provide similar skills and expertise.

The CTAN centers are organized in biogeographic areas that closely follow State Water Resource regional board boundaries, except in the southern California area.

We imagine that initially we could have about 12 nodes/centers in the network spread around the state. So far, we have potential involvement from scientists at UCLA, Humboldt State University, UC Davis, CSU Chico, UC Santa Cruz, CSU Fresno, UC San Diego, CSU San Luis Obispo, CSU Sacramento, Merritt College, CSU Monterey Bay, Shasta College, University of Southern California, Sonoma Ecology Center, and Southern California Wetlands Recovery Project. Each place would operate independently in terms of working with local and regional efforts to prioritize actions and implement them. The network would work collectively to organize funding, communicate scientific approaches, tools, and lessons learned, and provide one organizational front to state agencies in Sacramento. Initially each center/node will need approximately \$250,000 per year. Initial funding could potentially come from direct legislative line item support, program specific funding from the resource agencies, and federal sources.



Together the regional CTAN centers represent the “Network”. The Network will be guided by a Council, authorized through an MOU with state agencies and includes representatives from each agency and a representative from watershed groups in each region. The Network will have a staff person who works for and is appointed by a Committee of the Network Centers. MOU’s will be established with several state agencies and departments, including the Resources Agency, the California Environmental Protection Agency, and the California Department of Transportation. Where possible and appropriate, agreements will also be established with California tribes.

Initial Sponsors: UC Los Angeles, Humboldt State University, UC Davis, CSU Chico, UC Santa Cruz, CSU Fresno, UC San Diego, CSU San Luis Obispo, Merritt College, CSU Monterey Bay, Shasta College, University of Southern California, Sonoma Ecology Center, and Southern California Wetlands Recovery Project

Mission Statement

The mission of the CTAN is to promote, conduct, and provide capacity building through technical assistance and education services statewide in support of the missions of participating agencies and watershed organizations.

Goals

1. Coordinate the linking of scientific resources with watershed needs
2. Aid in local interpretation and understanding of technical information
3. Provide mechanisms to get research and technical assistance on the ground
4. Provide technical education and local capacity-building

The regional CTAN centers would be guided by strategic and annual work plans. CTAN partners at each center will develop multi-year strategic plans and an annual work plan for specific project implementation. Working on a regional level ensures better integration with other on-going programs. The annual plans will assist agencies in for efficient resource allocation.

This program is modeled after the National Cooperative Ecosystem Studies Units authorized into Public Law 105-391 and implemented through formal Memoranda of Understanding among participating federal agencies.

Products and Services

The primary services will be education and capacity-building for watershed groups and their stakeholders. Watershed groups in California and elsewhere have self-reported in surveys that having adequate scientific information is significantly correlated with the ability of the group to have a positive impact on the watershed

(<http://www.wpp.ucdavis.edu/EPA%20final%20report%202-15-02.pdf>, Table 17 p. 33). This correlation was greater than for other skill types that the state could provide from outside the groups, such as coordination skill training, funding, facilitation quality, and participation of agency staff. The following list includes the types of education and capacity-building services the CTAN centers would provide, based on expressed need by the watershed groups. The list is not all-inclusive and not all centers would have all skills and services.

1) Basic Process Education: workshops speakers for “how watersheds work”; portal for existing educational material about specific and general topics of interest; using the whole Network, provide long-term continuing source of expertise about all scientific disciplines relevant to watershed management and watershed performance.

2) Geographic Information Systems: collecting, cataloguing, and organizing existing spatial data; simple modeling and analysis; publication of informative maps for restoration and other types of decision-making

3) Water Quality: designing monitoring programs, including site, frequency, and parameter selection; collecting and organizing existing data; analyzing existing and new water quality data; relating water quality findings to different kinds of decision-making (e.g., TMDL, restoration planning implementation and monitoring, mitigation of impacts); educating the larger communities about state of the water column.

4) Watershed Assessment: using the California Watershed Assessment Manual and other guides; design and implement continuing, periodic, or one-time watershed assessment; educate stakeholders about technical aspects of process; collecting and analyzing watershed data; evaluating performance and health of waterways and watersheds; integrating the information gathered to inform different kinds of decision-making; informing monitoring with assessment findings.

5) Watershed Management and Restoration: deciding what scientific findings and information are needed to make “science-based” decisions; how to directly relate this information to the decision-makers and the decision-making process; how to monitor and measure management and restoration success from a science point of view.

6) Connecting Groups to Advanced Technical Resources: who does simple to complex modeling and when would it be useful; encouraging new research or finding out about old research in the watershed; contemporary approaches for connecting science to management decision-making

Implementation

Coordination with other efforts In different parts of the state, non-profit organizations, state and federal agencies, academic institutions, and others have developed or proposed local or regional technical assistance processes. Rather than reinvent the wheel in these places, the CTAN centers would work with these processes. These include the State Water Resources Control Board’s assistance to citizen monitoring programs, educational materials provided by non-profit organizations like the Bay Institute, Sierra Nevada Alliance, River Network, and others. One articulated idea is Sierra Nevada Alliance’s “circuit rider” program. In this case, the network centers would work with the circuit riders where needed and feasible to provide the technical and scientific knowledge to complement the circuit rider’s organizational assistance.

Prioritization of effort Network centers would work with watershed groups in their region to assess how much assistance and capacity building is needed in each watershed. The range is likely to be from groups early in organizing and needing basic start-up help, to mature groups needing no organizational assistance, but wanting more advanced scientific tools to understand watershed processes. Based on this needs assessment, the network centers would work in an adaptive way with multiple groups, providing a range of educational and assistance services.

Scope of work The centers would limit their assistance to 5-10 watersheds in their region in order to provide quality services with what is likely to be a limited budget and staff. This would amount to 2 - 3 million acres in the UC Davis area, for example, and would include Sierra Nevada rivers and Sacramento-area creeks. The time-frame would be determined by the watershed groups and network centers, but is likely to range from one to several years. The

issues and scientific disciplines covered would range from watershed functions (hydrology, disturbance, ecology, water supply and quality) to data collection and analysis (data organization software, GIS, simple modeling) and interpretation for decision-making. The interface with organizational capacity building would occur in the needs assessment phase, the assistance phase, and with assistance with getting project funding.

Evaluating Success Rather than assume that all Centers, or the CTAN as a whole, knows how to provide high-quality education and assistance, we will sponsor an external analysis of our effectiveness in “messaging” to the watershed communities. This will be based on contemporary statistical approaches to effectiveness evaluation.

Staffing The Universities, Colleges, and nonprofit organizations would provide staff according to the needs of the groups and the budget limitations. Technical staff would have at a minimum a Bachelor degree in a relevant discipline and would be supervised by Supervisor level (University) or Program Director level (nonprofit) staff. Each network center would have a center director, who will be involved in the center’s team approach to providing educational and capacity building services.

Funding The primary sources of funding will be extramural funds from federal sources and the state budget. Although we think the CTAN will be invaluable in assisting state bond-funded programs, we will try to minimize the use of these funds. We will seek three kinds and scales of support: 1) for local/individual CTAN centers working with watershed-relevant agencies and organizations within a region; 2) for regions including several CTAN centers working with regional watershed decision-makers on regional issues (e.g., salmon restoration); and 3) for the whole statewide network of centers in a coordinated fashion. These scales will allow flexibility in the pursuit of funding at various scales and for various issues.

Organizational Model There would be a single entity known as CTAN, with the Network Board and staff making decisions and funding applications on behalf of the Network. The Network Board would include representatives from agencies, watershed groups, and (non-voting) representatives from each collaborating institution. The Board would make decisions about disbursement of funds, statewide priorities, and evaluate performance of the CTAN. It would be a forum for sharing educational and technical approaches to informing watershed management and for problem resolution at the regional scale. Staff would coordinate the Network, encourage communication among the regions, organize the annual conference, and facilitate the performance review by the Board.

Funding Disbursement We propose three possible methods of distributing funds: 1) central (single statewide contractor) receiving of funds and non-competitive disbursement to collaborating universities; 2) central receiving of funds and statewide, open, competitive process for universities/colleges to receive funds/contracts; 3) regional receiving of funds (e.g., Regional Boards), and non-competitive disbursement to collaborating universities; and 4) regional receiving of funds (e.g., Regional Boards), local competitive process within and among assistance-areas. [Selection of the model to use will be up to negotiation between state agencies and the collaborating institutions. “Regions” are regional board regions, “assistance areas” are the regions around each center.]

CALIFORNIA WATERSHED GROUP INFORMATION NEEDS SURVEY

This survey is being conducted to identify information needs to support watershed groups that are involved in developing watershed assessments and related planning documents, and conducting watershed projects. Your participation in this survey will help inform government agencies as to the type of information that your organization needs so that they can be considered by these agencies as they plan their information systems and activities. All survey results will be made available via the California Watershed Portal (<http://cwp.resources.ca.gov/>). We estimate that it will take you less than 30 minutes to respond to this survey. Thank you for your participation.

Your Name: _____

Your E-mail Address: _____

(Please note that your contact information will be used only for the purpose of analyzing survey results and will not be made public)

GROUP AFFILIATION AND INTERESTS

1. Do you belong to a watershed group or local environmental organization?

Yes ☐
No ☐

Group Name _____

Affiliation

Member	<input type="checkbox"/>
Staff	<input type="checkbox"/>
Director	<input type="checkbox"/>
Board Member	<input type="checkbox"/>
Other (explain)	<input type="checkbox"/>

2. Have you listed your group in the watershed groups registry maintained by UC Davis (<http://www.ice.ucdavis.edu/groups/>)?

☐ Yes
☐ No

3. Are you familiar with the California Watershed Assessment Manual maintained by UC Davis (<http://cwam.ucdavis.edu/>)?

☐ Yes
☐ No

CALIFORNIA WATERSHED GROUP INFORMATION NEEDS SURVEY

4. Please indicate your regional affiliation or area of interest:

(Check all that apply)

<input type="checkbox"/>	All of California
	or
<input type="checkbox"/>	North Coast
<input type="checkbox"/>	North Lahontan
<input type="checkbox"/>	Sacramento River
<input type="checkbox"/>	San Joaquin River
<input type="checkbox"/>	San Francisco Bay
<input type="checkbox"/>	Central Coast
<input type="checkbox"/>	Tulare Lake
<input type="checkbox"/>	South Lahontan
<input type="checkbox"/>	Colorado River
<input type="checkbox"/>	Los Angeles
<input type="checkbox"/>	Santa Ana
<input type="checkbox"/>	San Diego



CALIFORNIA WATERSHED GROUP INFORMATION NEEDS SURVEY

5. Please indicate your group's level of interest in the following watershed issues. Use blank rows to list and rate other issues (0 = none, 1 = low, 2 = medium, 3 = high):

Watershed Issues	
	Agriculture Practices
	Air Pollution
	Sediment and Erosion (Coastal)
	Sediment and Erosion (Fluvial)
	Economic Development/Revitalization
	Environmental Justice
	Excessive Nutrients
	Exotic Species
	Farmland Preservation
	Fire and Fuels
	Flooding
	Flow Alterations
	Forestry Practices
	Groundwater Pollution
	Habitat loss or alterations
	Inter-regional Watershed Planning
	Levee Stability
	Noxious Aquatic Plants
	Open Space
	Resource Extraction
	Riparian
	Surface Water Contamination
	Surface Water Temperature
	Threatened or Endangered Species
	Toxics
	Tribal/Cultural Interests
	Urban Expansion
	Water Conservation
	Water Quality
	Water Supply
	Wetlands

CALIFORNIA WATERSHED GROUP INFORMATION NEEDS SURVEY

6. Please check off the documents your group is actively involved with or developing and indicate (yes or no) if they are publicly available (use the empty rows at the bottom to list other documents):

Document		Publicly Available
<input type="checkbox"/>	20 Year Water Supply Adequacy Assessment	
<input type="checkbox"/>	Action Plan	
<input type="checkbox"/>	Baseline Assessment	
<input type="checkbox"/>	Community General Plan	
<input type="checkbox"/>	Groundwater Management Plan	
<input type="checkbox"/>	Habitat Conservation Plan	
<input type="checkbox"/>	Hazard Mitigation Plan	
<input type="checkbox"/>	Monitoring plan	
<input type="checkbox"/>	Resource Management Plan	
<input type="checkbox"/>	Stormwater Pollution and Prevention Plan	
<input type="checkbox"/>	Timber Harvest Plan	
<input type="checkbox"/>	TMDL	
<input type="checkbox"/>	Watershed Assessment	
<input type="checkbox"/>	Watershed Management Plan	
<input type="checkbox"/>	Wild and Scenic River proposal	
Other		

7. How many long term, active members does your organization have?

<input type="checkbox"/>	1 to 5
<input type="checkbox"/>	6 to 10
<input type="checkbox"/>	11 to 20
<input type="checkbox"/>	More than 20

8. How diverse is your membership?

<input type="checkbox"/>	High (members represent a variety of views on a broad range of demographic, cultural, environmental and economic interests)
<input type="checkbox"/>	Medium (members tend to share common views on a limited range of issues and interests)
<input type="checkbox"/>	Low (members tend to represent a narrow perspective primarily around a few key issues or interests)

CALIFORNIA WATERSHED GROUP INFORMATION NEEDS SURVEY

9. How long has the watershed group been active?

- ☐ Less than 1 year
- ☐ 1 to 5 years
- ☐ 6 to 10 years
- ☐ 11 to 20 years
- ☐ More than 20 years

10. How long have you been an active member?

- ☐ Less than 1 year
- ☐ 1 to 5 years
- ☐ 6 to 10 years
- ☐ 11 to 20 years
- ☐ More than 20 years

DATA AND INFORMATION NEEDS

11. Indicate which of the following data and/or information sources are important to your work.

- a. Under "Importance," enter a whole number between 0 (unimportant) and 3 (critical) to indicate how valuable the item is to you.
- b. Under the "Format" column, use a "+" to indicate the format for data or information that you currently use, a "-" for the desired format of data or information you need but can't currently obtain, or leave blank if not applicable.
- c. Put an "X" under activities that require the indicated data or information or leave blank if not applicable.

Data or Information	Importance (0 to 3)	Format (+ or -)				Activities (X)										
		Hardcopy	Digital/Electronic	Interviews	Field survey	Determine baseline Conditions	Restoration	Project Portfolio	Design Project	Project Monitoring	Funding	Grant Application	Evaluate Project Success	Grant Administration	Permitting	Other
Funding/Grant Sources/Opportunities																
Guidelines – Environmental Assessment & Monitoring																
Guidelines – Government Permits																
Guidelines – Grant Applications																

CALIFORNIA WATERSHED GROUP INFORMATION NEEDS SURVEY

Data or Information	Importance (0 to 3)	Format (+ or -)				Activities (X)										
		Hardcopy	Digital/Electronic	Interviews	Field survey	Determine baseline Conditions	Restoration	Project Portfolio	Design Project	Project Monitoring	Funding	Grant Application	Evaluate Project Success	Grant Administration	Permitting	Other
Guidelines – Watershed Planning																
Photos/Illustrations – Contemporary of Area/Region																
Photos/Illustrations – Fish & Wildlife																
Photos/Illustrations – Historic of Area/Region																
River/Stream Flow Data																
Satellite and Aerial Photography/Imagery																
Maps – Barriers to Fish Passage																
Maps – Cultural & Archeological Sites																
Maps – Demographics (Population, Economic, etc.)																
Maps – Elevation (Topography)																
Maps – Land Ownership																
Maps – Land Use (Zoning)																
Maps – Natural Hazards; Fire																
Maps – Natural Hazards; Flood																
Maps – Natural Hazards; Geological (Land slides, faults, erosion, etc.)																
Maps – Pollution Hazards (Mines, Super Fund Sites, Land fills, etc.)																
Maps – Rare & Sensitive Species Locations																
Maps – Soils																
Maps – Surface Waters (Lakes, Rivers, Springs, etc.)																
Maps – Transportation (roads, highways, trails, etc.)																
Maps – USGS Topographic																
Maps – Watersheds																
Maps – Wildlife Habitat; Aquatic																
Maps – Wildlife Habitat; Riparian																
Maps – Wildlife Habitat;																

CALIFORNIA WATERSHED GROUP INFORMATION NEEDS SURVEY

Data or Information	Importance (0 to 3)	Format (+ or -)				Activities (X)										
		Hardcopy	Digital/Electronic	Interviews	Field survey	Determine baseline Conditions	Restoration	Project Portfolio	Design Project	Project Monitoring	Funding	Grant Application	Evaluate Project Success	Grant Administration	Permitting	Other
Upland Terrestrial																
Maps – Wildlife Habitat; Wetland																

List “Other” data or information types not identified above:

List “Other” activities not identified above:

12. If there are any critical data or information types identified in the previous question that are currently unavailable please comment on why they are important to your group.

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13. Among the different types of information you use, please indicate the extent to which geographic information system (GIS) data and services are important to your work by putting an “X” next to the statement that best describes your response:

<input type="checkbox"/>	Not important; we make no use of GIS data or services.
<input type="checkbox"/>	Low importance; we make little use of GIS data or services.
<input type="checkbox"/>	Somewhat important; we make some use of GIS data or services
<input type="checkbox"/>	Important; we make regular use of GIS data or services.
<input type="checkbox"/>	Very Important; we make frequent and extensive use of GIS data or services.

14. If you make very little or no use of GIS data and services in your work, which of the following are most important to increase your use of GIS (check all that apply)?

CALIFORNIA WATERSHED GROUP INFORMATION NEEDS SURVEY

- ☐ Increased Capacity: Access to funding resources, hardware, software and GIS trained staff.
- ☐ Increased Capability: Better training, knowledge of how to use GIS and integrate it into watershed projects.
- ☐ Other (Describe): _____

15. If you currently use GIS data or services in your work, which of the following statements best describes how self-sufficient you are with respect to GIS data?

- ☐ We rely entirely on 3rd party sources for GIS data.
- ☐ We produce little of our own GIS data and rely mostly on 3rd party sources.
- ☐ We generate a significant amount of our own GIS data.

16. Please list any 3rd party sources you use for GIS data and services.

TRAINING AND INFRASTRUCTURE NEEDS

17. What kind, if any, of Internet connection does your organization use?

- ☐ None
- ☐ Dial up with modem (e.g., 56Kb)
- ☐ Broadband (DSL or cable modem)
- ☐ Dedicated, high speed circuit (e.g., T1 or better)
- ☐ Don't know
- ☐ Other (explain): _____

18. Does your organization have training needs in any of the following (check those that apply):

- ☐ Conducting workshops
- ☐ Data/GIS analysis
- ☐ Designing, planning and conducting environmental sampling or monitoring
- ☐ Education and outreach
- ☐ Grant writing
- ☐ Planning documents (e.g., watershed manuals, assessments, etc.)
- ☐ Web development
- ☐ Other (describe): _____

CALIFORNIA WATERSHED GROUP INFORMATION NEEDS SURVEY

19. How often have you used the California Watershed Portal (<http://cwp.resources.ca.gov/>)?

<input type="checkbox"/>	1st time
<input type="checkbox"/>	Daily
<input type="checkbox"/>	Weekly
<input type="checkbox"/>	Monthly
<input type="checkbox"/>	Less than monthly
<input type="checkbox"/>	Never

20. How can we make the California Watershed Portal more useful for your watershed group?

--

21. Please list any web sites that you find useful for watershed work:

22. Would you prefer a watershed website focused on your specific region, watershed or area of interest?

<input type="checkbox"/>	Yes
<input type="checkbox"/>	No

23. Do you feel that a web site for watersheds within your region, rather than statewide, could provide significantly improved information and communication among watershed groups within your region?

<input type="checkbox"/>	Yes
<input type="checkbox"/>	No

24. Are there any other comments you would like to make?

--

**Government Agency
Watershed Data and Information Needs Assessment**

Introduction (or in letter format signed by Resources/CalEPA Secretaries??)

This is a survey designed by the California Watershed Council's Data and Information Exchange Workgroup for state, federal and local government agencies in California. The survey is designed to help the California Watershed Council better understand what data and information you have that may be of assistance to local entities working on watershed restoration and management so that we can help facilitate interaction with and support of local watershed partners to meet the state's watershed restoration objectives. Also, we would like to know what your own data and information needs are relative to decisions that affect the health and condition of California's watersheds.

The California Watershed Council (CWC) was established by the Resources Agency and Cal/EPA to implement the **Watersheds, Clean Beaches and Water Quality Act** (AB 2534, Pavley, Chapter 727, and Statutes of 2002). This legislation established a new program, the Integrated Watershed Management Program (IWMP), for the purposes of improving water quality, fisheries and habitat, water supply reliability, river corridor recreation, forest and fuels management, and hydropower management, for reducing flooding, and for controlling erosion and sedimentation.

The **Watersheds, Clean Beaches and Water Quality Act** (AB 2534) also required that the two agencies – the Resources Agency and Cal/EPA – ensure coordination with other programs and establish a public stakeholder advisory process. The details of how the two agencies work together is outlined in a Memorandum of Understanding signed by the Secretaries of both agencies.

The California Watershed Council was established on August 28, 2003, to facilitate the public advisory process required by AB 2534. The Council is charged with recommending CWC activities and priorities, and identifying the funding necessary to implement those priorities. The Council will also advise the Secretaries on specific watershed programs and related issues, such as funding opportunities, program effectiveness and efficiencies, regional partnership needs, technical assistance and capacity-building opportunities for watershed groups and citizen volunteers, information exchange, and implementation of the California Watershed Strategic Plan.

By completing and submitting your responses to this survey, you will be helping the State of California better meet your needs and those of local watershed groups throughout the state.

Thank you for contributing your time to making this effort a success.

Government Agency Watershed Data and Information Needs Assessment

The Survey

- Please identify the primary types of data and information you make publicly available for use in watershed planning, management and/or restoration.
[Feel free to attach a data/information library list if you have one available; but please do include any website or contact information on the chart below if it does not appear on your library list.]

Format (e.g. existing literature/reports, historic photos, satellite imagery, GIS data layers, etc.)	Content (e.g. T&E species locations, roads, demographic info, water quality monitoring sites, dam locations, soils info, vegetation types, etc.)	Availability (e.g. downloadable via website [please include web address], available in hard copy or on disk by request [please include contact info], available for review at your office, etc.)

- Please provide the we site addresses (URLs) for any interactive websites hosted by your Agency where outside users can query your data and make their own maps?

Interactive Web Site Addresses or URLs

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What software, if any, would an outside user need in order to make use of these sites?

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How would you categorize the level of GIS knowledge and/or expertise needed to make use of the interactive mapping capability on that site?

	A) No specific knowledge/experience necessary
	B) Some knowledge/experience necessary (<i>please specify</i>):
	C) Substantial GIS knowledge/experience necessary (<i>please specify</i>):
	D) Must be an expert to use this site.

3. Does your agency provide any GIS or other data/information services or training to outside users?

___ Yes ___ No

If yes, who is the contact in your agency to discuss these services?

Name:	
Agency/Title:	
Mailing Address:	
Telephone:	
Email:	

4. In addition to web sites you may have already listed, please list any web sites you host that may be of use to others for watershed work (CWC may be able to provide links to these on future websites):

Your Web Site Addresses or URLs

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5. Please list any web sites hosted by others that you find useful in your watershed related work (CWC may be able to provide links to these on future websites):

Other Helpful Web Site Addresses or URLs

6. Is your agency's data and information referenced in or otherwise available through any of the following sites?

Catalog/Data Sites	Web address	Yes or No
California Environmental Information Catalog	http://gis.ca.gov/catalog/	
UC Davis Information Center for the Environment (ICE)	http://ice.ucdavis.edu	
California Legacy Project Digital Conservation Atlas	http://legacy.ca.gov/new_atlas.epl	
Other(s) <i>[please specify]</i> :		

7. Is your agency working on any new data projects (e.g. new or additional data collection, data updating, data sharing, data compatibility)?

_____ Yes _____ No

If yes, please briefly list and describe the project(s) below:

Project:
Expected Completion Date:

Project:
Expected Completion Date:

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Project:
Expected Completion Date:

Project:
Expected Completion Date:

8. Is there anything else you want the Watershed Council to know regarding data and information you make publicly available that may be of value to local watershed groups?

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9. How can the Watershed Council help facilitate your work in partnership with local watershed groups (e.g., coordination, communication, data, information, etc.)?

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10. Are you interested in becoming involved in the California Watershed Council?

___ Yes ___ No ___ Already Involved

If yes, please give us your contact information so we can add your name to our information/contact list.

Name:	
Agency/Title:	
Mailing Address:	
Telephone:	
Email:	

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11. Are you interested in becoming involved with the Data and Information Exchange or other CWC workgroups? If so, please check the workgroup(s) you are interested in and provide your contact information below, and we will add your name to the workgroup contact list.

Workgroup	Purpose	Interested
Data and Information Sharing	Identify information needs of watershed groups in the state and propose recommended solutions for better meeting those needs.	
Economics and Funding	Identify watershed group funding needs and assess state watershed granting programs' ability to meet needs; propose recommendations for meeting funding needs and improving coordination and implementation of future granting programs.	
Policy and Operations	Define CWC purpose and relationship with other related groups and efforts; propose recommendations for how best to coordinate and improve how different entities work together to address the California Watershed Management Strategic Plan and AB 2534 goals.	
Integrated Planning	Evaluate current state of permitting and watershed assessment/planning; propose recommendations for streamlining appropriate permitting processes and encouraging effective use of integrated watershed assessment and planning tools.	
Education and Outreach	Identify watershed-based outreach and educational needs – both in terms of education in schools and communities and education of watershed groups themselves – and propose recommendations for better meeting those needs.	

Name:	
Agency/Title:	
Mailing Address:	
Telephone:	
Email:	

What is your preferred method of participation?

- ☐ Attend meetings in person
☐ Attend meetings by telephone conference call-in
☐ Attend meetings via Internet telecast
☐ Attend meetings via videoconference (if you have a facility near you)